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Journal of the Society of Arts.

FRIDAY, MARCH 26, 1858.

CONVERSAZIONI.

The Council have arranged for two Conversazioni during the present session; the first on Saturday, the 24th April, at the Society's House, for which a card will be issued to each member; the second on Saturday, the 8th May, at the South Kensington Museum, the card for which will admit a member and two friends, ladies or gentlemen.

EXAMINATION PRIZE FUND FOR 1858.

The following is a list of Donations up to the present date :—

T. D. Acland, Member of Council	£ 5	5
John Ames	5	5
J. G. Appold, F.R.S., Auditor	10	10
T. H. Bastard	5	0
R. L. Chance	5	5
Harry Chester, Vice-Pres.	10	10
G. Clowes	10	10
Henry Cole, C.B., Vice-Pres.	1	0
H. D. Cunningham, R.N.	£1	1
C. Wentworth Dilke, Vice-Pres. Chairman of Council (third donation)	10	10
Thomas Dixon	1	1
Lieut.-Col. F. Eardley Wilmot, R.A.	5	0
Lord Ebury	5	0
J. Griffith Frith, Member of Council	5	5
J. W. Gilbart, F.R.S., Treasurer (second donation)	10	10
F. Seymour Haden (annual)	2	2
William Hawksworth	1	1
Edward Highton (annual)	2	2
James Holmes (annual)	1	1
The Marquis of Lansdowne, Vice-Pres.	20	0
George Lowe, F.R.S.	1	1
The Master of the Mint, Member of Council (second donation)	10	10
George Moffatt, M.P.	10	10
Sir Thomas Phillips, Member of Council	5	5
William T. Radford	1	1
Charles Ratcliff, Hon. Local Sec. (annual)	10	10
Joseph Skey, M.D.	1	0
William Tooke, F.R.S., Vice-Pres.	10	10
Arthur Trevelyan	1	0
T. Twining, jun., Vice-Pres.	10	10
Dr. J. Forbes Watson	1	1
G. F. Wilson, F.R.S., Member of Council (third donation)	10	10

GALLERIES OF ART AND SCIENCE.

The Council have appointed the following gentlemen a Committee to consider and report on the practicability of establishing Galleries of Art and Science in different parts of the metropolis, which shall be open in the evening.

Henry Cole, C.B.
C. Wentworth Dilke (Chairman of the Council.)
William Hawes.
J. C. Macdonald.
George Moffatt, M.P.

REPORT OF THE ARTISTIC COPYRIGHT COMMITTEE TO THE COUNCIL.

Your Committe, appointed by your minute of the 2nd day of December, 1857, for inquiring into the subject of Copyright in Works of the Fine Arts, have examined the matters referred to them, and agreed to the following

Report.

At their first meeting, your Committee appointed Sir Charles Eastlake, President of the Royal Academy, their Chairman; John Lewis, Esq., (then President of the Society of Painters in Water Colours) Deputy Chairman; and D. Roberton Blaine, Esq., Barrister-at-law, Reporter.

Your Committee have held ten meetings, which on all occasions have been numerously attended.

For the purpose of clearly defining the objects of your Committee, they passed the following resolutions on the 31st day of December, which were inserted in the Journal of your Society, and otherwise extensively circulated :—

"Resolved—That the inquiries of this Committee be directed

1. To ascertain the existing laws of British Artistic Copyright, and the chief defects of those laws.
2. How those defects affect the interests of producers of works of Art.
3. How they affect the interests of purchasers of works of Modern Art.
4. How they affect the interests of the public and the promotion of the Fine Arts.
5. How they affect the subjects of those foreign States with whom Her Majesty has entered into International Conventions; and what the laws of those States are as affecting Artistic Copyright.
6. To obtain instances of fraudulent or wrongful acts relating to works of Modern Art.
7. And lastly, to suggest such remedies as appear best calculated to amend the defects of our Artistic Copyright laws."

The Committee also passed a resolution, requesting Mr. Roberton Blaine to report to them upon the existing English common and statute-law relating to Artistic Copyright. In consequence of the interest mutually acquired by British artists and aliens under the various International Copyright Conventions, entered into by Her Majesty with Prussia, France, and other foreign states—and the Orders in Council founded on those Conventions—the Committee considered it advisable that the Report to be made to them should contain some notice of the Artistic Copyright Laws of these States. The document prepared by Mr. Blaine, in pursuance of the resolution above referred to, having been presented to your Committee, it was then, with your sanction, also printed and extensively circulated, in order that the public might be informed of the defective state of our laws of Artistic Copyright. Your Committee have likewise annexed it to this their Report, as it includes and answers the first five of the above resolutions of your Committee. It is marked (A) in the Appendix.

With respect to the sixth Resolution, passed by your Committee on the 31st December, namely, "To obtain instances of fraudulent or wrongful acts relating to works of modern Art," the Chairman of your Committee issued a circular letter, accompanied by a set of questions, Copies of which are appended to this Report, and marked (B) and (C) in the Appendix.

A very large number of answers were received in reply from many of the most distinguished artists, and other persons connected with the Fine Arts.

These answers afford most ample and conclusive evidence of the defective state of the laws of British

Artistic Copyright, and of the wrongful and fraudulent acts which are extensively and constantly committed with impunity, to the serious injury of artists and the purchasers of works of Art, as well as to the demoralization of the parties to such acts; but the communications made having been received confidentially, your Committee are prevented from publishing them.

Your Committee thereupon proceeded to pass the following Resolutions:—

I. That the existing laws of British Artistic Copyright are exceedingly defective and unjust. The chief defects are:—

1. That they afford the producers of works of Art no sufficient protection against the piracy of their productions.
2. That the purchasers of such productions are equally unprotected, and their property therein liable to invasion and injury.
3. That in consequence of this defective state of our laws of Artistic Copyright, direct encouragement is given to the extensive manufacture, which is carried on, of spurious copies of works of Art, which copies are extensively sold as originals, to the serious injury of the fame of the authors of such original works, the pecuniary loss of the purchasers of the spurious copies, and the demoralisation of the young or needy artists employed to manufacture such copies.
4. That our Artistic Copyright laws are unjust in their operation upon the Subjects of those foreign States who have entered into International Copyright Conventions with Her Majesty, inasmuch as such treaties are based upon the principle of *reciprocity*, and that while under those treaties the works of British artists first published in the British dominions are protected from piracy within the territory of the foreign State named in any such treaty, no similar protection is afforded in the British tertories in respect of the works by artists of such foreign States.

II. That the interest of art and artists, as well as of the public, require the laws of British Artistic Copyright should be amended.

With reference to the last resolution of the 31st December, namely, "to suggest such remedies as appear best calculated to amend the defects of our Artistic Copyright Laws," your Committee, after numerous meetings and lengthened discussions, passed the following resolutions:—

That any Bill which may be prepared for the amendment of the laws of British Artistic Copyright should, in the opinion of this Committee, include the following clauses:—

1. The repeal of all the existing Acts relating to Artistic Copyright.
2. That the amending Act should extend to all parts of the British dominions.
3. That it should protect all works of Art by British authors, although executed or first published in any Foreign State.
4. That it should likewise protect all works of Art by *alien* authors (whether friends or enemies), although executed or first published in any Foreign State.

On arriving at this stage of their proceedings, your Committee decided upon postposting the further consideration of clauses for any Bill which may be prepared, and passed the following resolutions:—

1. The chief object it is desired to effect by the Amending Act, is to secure a Copyright for the Author's life, and 30 years after, for such of the designs of an artist as he may himself have conceived, and as have been produced by his own hands, or by those of his assistants, and as he may himself have signed or marked, so as to claim Copyright for.

   [These would be works of which the artist's own brain may be considered as the inventor and primary source, and would include all, however first embodied; and whether they profess to be portraits of men or things, or the products of imagination: and will apply especially to the works of
   Painters and Designers,
   Sculptors and Die Engravers,
   Architects.]

2. The next object desired is, to secure protection for a like period of works of Art of a more imitative character, and not necessarily embodying original design, and to prevent these being used by strangers as a means or basis for reproducing others like them, to be sold in competition with themselves.

   [This will include the case of the piratical user by one engraver or photographer of the work of his rival, in order to make repetitions from, while it leaves the original design or other source open to both parties, and will apply principally to
   Engravers,
   Photographers,
   Plaster, &c., cast makers.

   E.g.—Mr. Doo may choose to engrave an old National Gallery picture. Any other engraver may go to the picture and engrave another, but he has no right to use Mr. Doo's engraving to produce it from. So with a photographer who may travel to the Holy Land, and bring back photographs. Others ought not to use his, though they may also go to the Holy Land and get the same subject there.]

3. The third object desired is, to secure, for a like period, Engravers against plates which have been engraved by them, and bear their name, being touched over and altered by others, and then re-issued with the engraver's name still on them.
4. It is desired to extend (as was done for authors in 1842) the Copyright above contemplated, to all the past works of living artists which they have still in their possession; and also to those which they have parted with, provided they obtain the consent of the proprietor, and affix their name or monogram.

Qualification on the Copyright above proposed.

1. As to architectural plans, models, &c.; only the use of the originals to be secured; but not to prevent new drawings, &c., being taken from executed buildings or works.
2. As to sculpture; only to prevent the publishing of copies, casts, engravings, &c., purporting to represent or reproduce the original design as the sole or chief end of the publication.

   [*E.g.*—No stranger ought to engrave one of the statues at the entrance of the House of Lords as a work *per se*. While a picture of the whole scene, including the set of statues as incidents, would be within the rule known as to Copyright books, permitting legitimate extracts not being competitions with the original work or design.]

As to Protecting the Public against Frauds.

The object is to to guard the public against—

1. The making, or causing to be made, copies of works of Art, for the fraudulent purpose of selling or exchanging such copies as originals.
2. The fraudulent sale or exchange of copies as originals.

3. **The fraudulent use of artists' or engravers' names, as to works which are not theirs.**
4. **The passing off fraudulently re-touched engravings as first proofs, &c., or as the works of the original engraver, though re-touched by other hands.**

The mode of effecting this is proposed to be by making—

1. The copying, or knowingly uttering of the copy of artists' names or monograms a felony.
2. The other offences a misdemeanour.

As to Legal Procedure to Enforce Copyrights.

In addition to such remedies as law would give—

1. Penalties, not less than £5, and not exceeding double the value of the design or work pirated, to be recoverable for each offence, in manner provided in Ornamental Designs Copyright Act, 1842.
2. Power to Courts and Justices to order the delivery up or the cancelling of pirated articles.

Very considerable discussion took place upon the point whether the *registration* of works of Art ought or ought not to be made a condition precedent to the acquisition of any Copyright therein, and your Committee ultimately resolved that no such registration ought to be required, and thereupon passed the following resolutions:—

1. That having regard to the number of works of Art which are daily produced; to their nature; and to the circumstances under which they are produced, it is the opinion of this Committee that a complete Copyright Registration, by all British and Foreign artists, so arranged as to show, through Drawings, Models, or the like, all the matter for which Copyright is proposed to be conferred, would be wholly impossible. That its attainment is not desired by artists or publishers, and that no advantage would arise from it to the public.
2. That to make Registration a condition precedent to the acquisition of Artistic Copyright, would render it necessary that every work tendered to exhibition, although refused, and every sketch in the folio of the artist, should previously have been sent to London and registered, and so would be to place artists under a condition not imposed upon authors, and by the difficulty of the task imposed and the expense involved, and by the unnecessary centralization of the office, would debar the bulk of the body from the benefit of the proposed law. It would also render it impossible to grant a Copyright to the past works of living artists.
3. That to make Registration a condition precedent, would further be to encourage the commission of piracies on artists and frauds on the public, because the parties dealing in such piracies and frauds would be always on the alert to avail themselves of every slip in the registry, just as has always been the case with respect to patents.
4. That, in considering this subject, it should be borne in view that artistic piracies are, in their nature, more injurious to the public than those committed on authors or ornamental designers; because, in the latter cases, the purchaser is as well-served and contented with the pirated work as he would have been with an original; whereas, upon infringements of Artistic Copyright, the purchaser of the pirated copy is often much more injured than the artist. The case most analogous to the one under the consideration of the Committee, is that of pirated trade marks, as to which no registration is required by law, and on which, with reference to a foreign trade mark pirated here, his honour, Vice Chancellor Wood, has lately used the following most apposite words,—"I cannot conceive anything short of indictable offences more discreditable than such proceedings." (3 Kay and J. 433.)
5. In considering the subject of imposing registration as a condition precedent to title, it should further be borne in mind that such a law makes title always turn on points wholly immaterial to the justice of the case; and that the experience of the mischiefs arising from such a registry, 1st as to shareholders or joint stock Companies, and 2nd and 3rd as to ships and patent rights, has lately led the Legislature almost entirely to abolish the 1st, and greatly to modify the 2nd and 3rd.
6. That the position in life and want of business training of artists, the pecuniary difficulties which so many of them have to contend with, the remote places in which their studies are constantly made and their works often produced, the frequent changes made in them, often long after their first publication and sale, should be had in view before a condition is imposed so onerous to them in its performance and so sure to be neglected, and would make it necessary that they should, as authors now do, only connect themselves with the purchaser and public through publishers or dealers, a state of things as regards the influence of art to be deprecated.
7. If, notwithstanding these considerations, doubts should still be entertained by the Legislature as to the propriety of imposing some registration, then this Committee submits that such imposition should be postponed until the proposed new law has been at work long enough for experience to develop those points (if any such there should have to be) to which such a registration should be directed.

Charles L. Eastlake, P.R.A. (Chairman.)
John Lewis (Deputy Chairman.)
*D. Roberton Blaine (Reporter), *subject to the protest below.*
Joseph Arden.
Francis Barlow.
*Jacob Bell, F.L.S.
*John Bell.
William John Broderip, F.R.S.
*F. S. Cary.
*A. E. Chalon, R A.
*A. Claudet, F.R.S.
C. R. Cockerell, R.A.
J. D. Coleridge (*except as to the resolutions relating to registration*)
*H. Cole, C.B.
David Cox, jun.
Thomas Creswick, R.A.
Henry Darvill.
*C. Wentworth Dilke, (Chairman of Council.)
*John Dillon.
George Thomas Doo, R.A.
*William Dyce, R.A.
Andrew Edgar (*subject to the protest below.*)
Francis Ellis (*subject to the protest below.*)
James Fahey.
*Roger Fenton.
Edwin Field.
*Robert Fletcher.
*William M. Fladgate.
John Henry Foley, R.A.
William Powell Frith, R.A.
*George Godwin, F.R.S.
Louis Haghe.
William Hallowes.
Solomon A. Hart, R.A.
William Hawes.
J. R. Herbert, R.A
F. Y. Hurlstone, (President of the Society of British Artists.)
Joseph J. Jenkins.
*Owen Jones.
F. Joubert.
J. P. Knight, R.A.
R. S. Lauder (President of the National Institute of Fine Arts.)
*John Leighton, F.S.A.
John Linnell.
Daniel Maclise, R A.
*William Mulready, R.A.
John Murray.
*Matthew Noble.
F. R. Pickersgill, R.A.
*Henry Pollock.
John Pye.
R Redgrave, R.A.
*Sir W. C. Ross, R.A.
George Scharf, jun.

Bell Smith.
Frank Stone, A.R.A.
Frederick Tayler (President of the Society of Painters in Water Colours.)
Tom Taylor.
*William Tooke, F.R.S.
E. M. Ward, R A.
H. Warren (President of the New Society of Painters in Water Colours.)
*R. Westmacott, R.A.

* Members of the Society of Arts.

A protest was made by Mr. Roberton Blaine against the decision of the Committee upon the question of registration of works of Art as above stated, which protest was ordered to be entered upon the minutes of the Committee, and is as follows:—

The undersigned protests against a system of non-registration of works of Art for the following amongst other reasons:—

1. That, as between the author of a work of Art and the public, it is the only means by which a reliable record can be obtained of the time when the Copyright in such work will commence, and consequently when it expires.
2. That in cases where the author of a work of Art sells it, but reserves his Copyright therein, registration is the only certain and equitable mode by which the evidence of any such reservation can be preserved, and made to run with the possession of the work to which it relates, so as to be binding on all persons through whose hands the work may pass from the first purchaser.
3. That registration would always afford the authors of works of Art a certain and indisputable record that they are entitled to the Copyright of such of their works as are registered, unless their contracts for sale thereof appear upon the register.
4. That in cases of *piracy* of the Copyright, registration would form a most valuable record, at any distance of time, of the identity of the work pirated, the time and place of its first publication, and the name of the author; evidence of all which essential facts it would, after a considerable lapse of time, in most cases be found impossible to obtain except by means of a Register.
5. That the publicity of registration will materially aid in preventing a continuance of these acts of piracy and fraud to which artists and purchasers of works of Art are now exposed.
6. That the principle of compulsory registration has already been repeatedly established by the Legislature, viz., as to Copyright in Useful and Ornamental designs; and
7. Also as to works of Literature and of the Fine Arts under the International Copyright Act, and the various Conventions entered into by Her Majesty with Foreign States.
8. Because, by the existing Engraving and Sculpture Copyright Acts, no Copyright can be acquired in a work of Art unless the date of its first publication, and the name of the proprietor of the Copyright appear thereon, so that the public may know that a Copyright therein is claimed by the author, and when it will expire.
9. Because a system of registration would afford a cheap and easy mode of assigning Artistic Copyrights, by entry in the Register, as may now be done with respect to literary and musical Copyrights, as well as those in maps, charts, and plans.
10. Because, as the law now stands with respect to literary and musical productions, &c., no proceedings at law or in equity can be maintained for piracy, unless the work in respect of which Copyright is claimed has been previously registered.
11. And lastly, That with all these facts in favour of registration, it is unreasonable to suppose Parliament will grant the additional protection required as to Copyright in works of Art without making the registration of such works a condition precedent to the acquisition of any Copyright therein.

D. ROBERTON BLAINE.

APPENDIX.

(A.)

MR. BLAINE'S REPORT TO THE COMMITTEE ON ARTISTIC COPYRIGHT.

In pursuance of the Resolution passed at the first Meeting of the Committee, I have prepared the following Report as to the existing English Common and Statute-law relating to Artistic Copyright.

I. *As to the Common-law Right.*

By the Common-law of England, no Copyright or protection exists in favour of Works of Art, except to this limited extent, namely, that while they remain *unpublished*, without the consent of the artist, or owner, no one can lawfully publish them without such consent. This principle has become established by analogy with a long series of decisions, chiefly as to literary productions. Thus, where Her Majesty the Queen and the Prince Consort had made several etchings, and impressions thereof were taken for their private use, and not for publication; impressions of these etchings having been obtained by surreptitious means, and the parties in possession thereof being about to publish the same, the Court of Chancery, upon a Bill filed by the Prince, restrained the defendants from publishing the etchings, or any catalogue thereof. The Lord Chancellor (Lord Cottenham) upon that occasion, said:—" The *property* in an author or composer of any work, whether of Literature, *Art*, or Science, such work being *unpublished*, and kept for his private use or pleasure, cannot be disputed after the many decisions in which that proposition has been affirmed or assumed." His Lordship at the same time held that the exclusive right of the author in *unpublished* works depends entirely on the Common-law right of property therein.*

In a more recent case, decided in the House of Lords, upon a question of Musical Copyright, Lord St. Leonards also said:—" The Common-law does give a man who has composed a work a right to that composition, just as he has a right to any other part of his personal property; but the question of the right of excluding all the world from copying, and of himself claiming the exclusive right of for ever copying his own composition, *after he has published it* to the world, is a totally different thing." His Lordship also held that no Common-law right exists after publication †

It was formerly held by Lord Mansfield, and other eminent Judges, that the authors of literary works had, by the Common-law, a copyright in their works *after* publication, and consequently that such Copyright was perpetual; but that doctrine was long since overruled by the House of Lords in the celebrated case of " *Donaldson* v. *Beckett*." ‡

The result is that the Common-law affords artists no protection whatever against the piracy of their works *after* the publication thereof by public exhibition, and that they are consequently dependent, for the very slender and imperfect protection they do enjoy for any Copyright in such works, upon

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* *Prince Albert* v. *Strange*: 1 Hall and T. pp. 21. 22.
† *Jefferys* v. *Boosey*: 4 Clark's H. L. C. pp. 977, 978.
‡ See 4 Burr. 2408; 2 Bro. P. C. 129.

II. *The Statute-laws of Artistic Copyright.*

These laws may be classed in the following divisions:—

1. The Engraving Copyright Acts.
2. The Sculpture Copyright Acts.
3. The British International Copyright Acts.
4. The Conventions and Orders in Council founded thereon.

I shall not notice the Useful and Ornamental Designs Acts, excepting so far as the latter relate to works of sculpture; because the designers of useful and ornamental articles have obtained a reasonable amount of protection in favour of their labours, and also because the objects of this Committee appear to be an investigation of the state of the laws of England relating to those productions which more strictly come within the definition of "the Fine Arts," such as paintings, engravings, works of sculpture, &c.

The British Engraving Copyright Acts are:—

1. The 8th George II., c. 13, 1735.
2. The 7th George III., c. 38, 1767.
3. The 17th George III., c. 57, 1777.
4. The 6th and 7th William IV., c. 59, 1836.
5. The 15th Victoria, c. 12, sec. 14, 1852.

It will be observed that the first of these Acts is upwards of 120 years old. It does not in any way protect any picture or drawing, as *such*, from piracy *after* its publication; its object was to protect *engravings* from piracy, including therein, as I believe, the designs for such engravings, and also maps, charts, and plans. For that purpose it gave a term of fourteen years' Copyright in engravings which any person should invent and design, engrave, &c., or, from his own works, should cause to be designed and engraved, &c., such term of fourteen years to commence from the day of first publishing any such engraving; and that the public might know when that day was, and consequently when the Copyright would expire, the following *conditions* are imposed upon the proprietors of the Copyright in the engraving:—

1. That the true date of first publication shall be engraved upon the plate.
2. Also the name of the proprietor.
3. And that these particulars shall be printed on every impression taken from the plate.

This antiquated Act was framed upon the statute of Ann relating to Literary Copyright Works, and with slight amendments has remained unaltered down to the present time. It is generally known as *Hogarth's* Act, from the circumstance of that great artist having obtained it by his own endeavours, and almost at his sole expense; facts which he has recorded upon a plate engraved by him in commemoration of that important and interesting event in his life.

Hogarth's Act only protected engravings made by an artist, or caused to be made by him from his *own* designs. This defect was remedied in 1767, by the Act of 7 Geo. 3, cap. 38, and the term of Copyright was extended from fourteen to twenty-eight years, that being the increased term which had then been granted in favour of literary productions. This term of twenty-eight years Copyright in engravings still remains unchanged; and, as before observed, it commences from the day when the engraving is first published.

In 1777 the Act of 17 Geo. 3, cap. 57, was passed, which after reciting the two previous Acts, that they had not effectually answered the purposes for which they were intended; that it was necessary for the encouragement of *Artists*, and for the securing to them the *property* of and in their works, and for the advancement and improvement of the arts of engraving, &c., that further provisions should be made for these purposes, it was enacted that, in addition to any damage the proprietor of the Copyright might recover for and infringement thereof, he should be entitled to *double* costs of suit. This and other similar enactments as to double costs, were, however, repealed in 1842 by the 5 and 6 Vic. cap. 99, sec. 2, which, in lieu of such double costs, gives a full and reasonable indemnity as to all the costs, &c., incurred in and about the action which may be successfully brought by the proprietor in consequence of any infringement of his Copyright.

It was only so recently as 1836 that the English Engraving Copyright Acts were extended to Ireland, by the 6 and 7 William IV., cap. 59. Up to the time of the passing of that Act, engravings first published in England might be and were pirated in Ireland with perfect impunity; and those first published in Ireland were, in like manner, subject to piracy in England.

In consequence of doubts having been entertained whether "lithographs and certain other impressions" were within the protection of our Engraving Acts in 1852, it was declared by the 15 Victoria, cap. 22, sec. 14, that they were intended to include "prints taken by lithography, or any other mechanical process."

Having thus briefly stated the substance of all the existing British Engraving Copyright Acts, I will now point out what appear to be some of the chief defects in these statutes. I shall adopt the same plan with respect to the British Sculpture Copyright Acts; and will conclude with some notice of the British International Copyright Acts, and the Conventions and Orders in Council founded thereon, so far as they relate to Works of the Fine Arts.

The chief defects of the British Engraving Copyright Acts are,

I. That they give artists no Copyright in their pictures, *as such*, but only for the purposes of engraving.
II. They afford no protection to the purchasers of original pictures against the piracy thereof.
III. They afford the public no protection against the purchase of spurious pictures, and thus operate as an encouragement to the grossest acts of fraud.
IV. That architects are quite unprotected in respect of their published designs, unless engraved before publication.
V. That the new art of photography is also entirely unprotected as respects Copyright.
VI. That the existing Acts only extend to Great Britain and Ireland.
VII. That the term of twenty-eight years Copyright is insufficient.
VIII. The expense attendant upon the assignment of Copyright by deed.
IX. And the expense attendant upon proceedings for the protection of Copyrights.

I. That the existing Acts give artists no Copyright in pictures, as such, but only for the purpose of engraving, will be fully understood when it is seen that, according to Hogarth's Act, a picture is only treated as a *design* for the purpose of engraving from. Both for fame and profit, Hogarth appears to have relied upon his original art, rather than that of a painter; it was his *engravings* that were pirated, and his Act was, therefore, framed to meet the requirements of his own case, and those of other artists similarly placed. Some of the chief mischiefs to which this state of the law exposes an artist are as follow,

1. After he has sold his picture he has no means of preventing its piracy, either as a picture, or for the purposes of engraving, excepting as between himself and the person to whom he has sold it. Contracts are often made by artists with the purchasers of their pictures, by which contracts the Engraving Copyright is secured to the artist. Such contracts are constantly avoided by the purchaser selling the picture to a third person without notice of the artist's contract as to the Copyright. He is thus defrauded of his property,

and his fame as an artist is exposed to serious injury.

2. Unless a picture be engraved, and the impressions published as Hogarth's Act directs, before such picture be publicly exhibited, no Copyright can, in my opinion, be acquired even in the *design* of the picture for the purposes of engraving; it is for ever lost to the artist.
3. And by depriving an artist of any Copyright in the design of his work, unless it be thus engraved before exhibition, he is denuded of an inducement to devote himself to those higher classes of pictures which require the greatest amount of thought and time in their composition; the best interests of Art are thus damaged.

II. The fact of the Engraving Acts affording no protection against the piracy of pictures is a mischief which affects the purchaser as well as the artist. Much of the *conventional* value of a picture depends upon its being *unique*. If protected against piracy, purchasers of pictures would have a further inducement given them to add to their collections, and they would buy with a confidence which is now impossible.

III. These Acts likewise afford the public no protection against the purchase of *spurious* works, and thus afford direct encouragement to the grossest acts of fraud. This Committee will doubtless be furnished with numerous instances of those frauds which have long been so extensively practised upon artists and the public in respect to pictures. In the mean time, I will only mention the recent decision of *The Queen v. Closs*. In that case a picture had been painted by Mr. Linnell, who signed and sold it for £180. The prisoner was a picture dealer, and was indicted for fraudulently selling a copy of Linnell's picture as and for the genuine picture which he had painted. Mr. Linnell's name was likewise painted on such copy, which the prisoner sold for £130. The indictment contained three counts: the first charged the prisoner with obtaining money under false pretences, but upon this count he was acquitted; the second count charged him with a *cheat* at Common-law, by means of writing Linnell's name upon the copy; and the third count charged the prisoner with a *cheat* by way of forgery of Linnell's name upon the copy. Upon these two last counts the prisoner was convicted; but his counsel objecting that these counts disclosed no indictable offence at Common-law, the judgment was respited in order that the opinion of the Criminal Court of Appeal might be taken upon the objection so raised on the part of the prisoner. The case was afterwards argued before five Judges, who formed such Court of Appeal, and they unanimously held that the conviction of the prisoner was *wrong*; that there was no *forgery*: and that "a forgery must be of some document or writing, and Linnell's name in this case must be looked at merely as in the nature of an arbitrary mark made by the master to identify his own work." As to the second count of the indictment, the court held that the conviction could not be sustained, because it did not sufficiently show that the prisoner sold the copy *by means* of Linnell's signature being forged upon it.[*]

The consequences of this decision, as respects the interests of artists, of the purchasers of works of Art, and the public morality, are too apparent to need any comment.

IV. Architects are entirely unprotected, in respect of their published designs, unless they engrave or lithogragh, and publish them as Hogarth's Act directs; in which event it would be an act of piracy to copy them for publication without the consent of the proprietor of the Copyright.

V. The new art of photography is likewise entirely unprotected as respects Copyright. Whatever may be the expense which has been incurred, and although the artist's name may be placed upon his works, any one may copy them, at any time *after* their publication, to the serious injury of the fame and profit of the original artist.

VI. The existing Engraving Copyright Acts only extend to Great Britain and Ireland, and do not include the Colonial, or any other portion of the British dominions, not even the Isle of Man, or the Channel Islands; these Acts being expressly confined to such prints as have been "engraved, etched, drawn, or designed in any part of Great Britain[*] or Ireland."[†] If so engraved, &c. out of the United Kingdom, it appears that no Copyright can be acquired under the Acts in question. Thus where a Bill was filed in Chancery to restrain the piracy of certain prints forming part of a book, which prints had been designed and engraved abroad, and only *published* with the book in England, the Court held that the plain object of the legislature was to protect those works only which had been *executed* in Great Britain (or Ireland), and not those which were only published there.[‡]

VII. The term of twenty-eight years' Copyright granted by the Engraving Acts is too short. I have already stated that these Acts were framed upon the Statutes relating to literary Copyright works, in which the term was originally fourteen years, but was afterwards increased to twenty-eight. In 1842 that term was by the Literary Copyright Amendment Act extended to a certain term of forty-two years, with the chance of a longer period, according to the author's life. The designers of maps, charts, and plans are included in that protection.[§] As therefore Parliament has conceded the principle, that the *property* in books, music, maps, charts, and plans shall be protected from piracy during a certain period of forty-two years, is it just to exclude the property of artists in their productions from a similar advantage?

VIII. The expense attendant upon the assignment of an artistic Copyright is a serious defect. Under the existing Acts no *valid* transfer of such a right can be made by the owner except by a *deed* signed by him, attested by *two* witnesses, and stamped with the proper *ad valorem* duty on the price of the Copyright, if sold. An assignment by deed was formerly requisite for assigning literary Copyrights, but the Literary Copyright Amendment Act of 1842 remedied that defect as to books, music, maps, charts, and plans, by enabling the proprietor of the Copyright to transfer it by entry in the Register at Stationers' Hall, *or* by deed.

The generally received opinion amongst engravers, printsellers, and auctioneers of artistic property, that the *Copyright* in a plate passes with the sale and *delivery* of such plate, is entirely fallacious, as the purchaser would find to his cost if he brought an action in his own name for the infringement of the Copyright, without having obtained an assignment of it by deed, attested by two witnesses.

IX. The expense attendant upon the requisite proceedings for the protection of a Copyright in cases of piracy is a most serious defect under the existing Acts; it is, however, a defect which is alike applicable to the whole body of our Statute-law affecting Copyrights of all descriptions. Even in the most flagrant instances of piracy, the proprietor of the Copyright has no remedy against the pirate except by an action at law for an injunction and damages, or a suit in Chancery for an injunction and account. The power recently given to the Courts of Common-law to grant injunctions is a great boon to the proprietors of Copyright, where their means, or the value of the Copyright at stake, are such as to warrant their embarking in a law-suit in one of the superior Courts.

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[*] See Weekly Reporter, 12th Dec. 1857, p. 109.

[*] See 17 Geo. 3, cap. 57.

[†] 6 and 7 Will. 4, cap. 59, sec. 1.

[‡] Shadwell, V. C. in *Page* v. *Townsend*, 5 Sim. 395.

[§] It has been held that *woodcuts*, illustrative of the letter-press of a book, and published therewith, are within the protection of this Act, as forming part of the book. Per Parker, V. C. in *Bogue* v. *Houlston*, 12, L. I. Ch. 470.

All the legislation which has taken place upon the subject of Copyright in England has proceeded upon the just theory that an author or artist has a *property* in his work. Where, therefore, a Copyright work is *literally* copied, or copied with merely colourable alterations, it seems difficult to distinguish the moral guilt of such a theft from that of picking a pocket, and consequently that such an act of piracy ought to be punishable as a *criminal* offence.

The British Sculpture Copyright Acts are:—

1. The 38th George III., C. 71. 1798.
2. The 54th George III., C. 56. 1814.
3. The 14th Victoria, C. 104, ss. 6, 7. 1850.

These Acts form the sole protection against piracy which a sculptor has in respect of any Copyright in his works *after* their publication.

The first of the above Statutes gave a term of fourteen years' Copyright in new works of sculpture. The next recites that the previous Act had been found ineffectual for the purposes thereby intended, and also gave a term of fourteen years' Copyright in new works of sculpture, together with a further term of fourteen years if the sculptor should be living at the end of the first term, and should not have divested himself of his Copyright. Both these Acts impose the following *conditions* upon the proprietor of the Copyright in any work of sculpture, and these conditions must be strictly performed, or he forfeits his Copyright therein.

1. That the proprietor of the Copyright shall cause his name to be put on his work before the same shall be published; and—
2. Also the date of such first publication.

The above Acts were amended in favour of sculptors by the Ornamental Designs Act of 15 Vic. cap. 104, ss. 6, 7, which enables sculptors to bring such of their works as are "within the protection of the Sculpture Copyright Acts," also within the protection of the Designs Act upon *condition* of such works

1. Being registered under the Designs Act.
2. That the word "Registered" shall appear upon every copy or cast of the work published by the sculptor, or his assigns, after its registration; and
3. The date of registration.

The defects of the Acts relating to Copyright in Works of Sculpture.

These defects appear to be almost as important and numerous as those I have mentioned with respect to the Engraving Copyright Acts. The second, third, sixth, eighth, and ninth are applicable as well to the former as to the latter of these Acts, and I will therefore not repeat them. In addition, the following may be noticed:—

I. The *certain* term of fourteen years' Copyright is insufficient.
II. A sculptor can acquire no Copyright in his works for purposes of engraving.
III. It seems doubtful whether a work of sculpture can be protected under the Designs Act without the performance of two sets of conditions.
IV. The works of sculpture are most frequently pirated by a class of persons against whom the existing laws afford a useless remedy.

I. The *certain* term of fourteen years' Copyright is insufficient. It is only extended to twenty-eight years if the sculptor outlives the first fourteen after the publication of his work. The interests of his *family* are lost sight of in this arrangement, and that the present term of Copyright allowed for works of sculpture is insufficient surely must be admitted when it is remembered that twenty-eight years are conceded for engravings, and forty-two years *certain* for books, music, maps, charts, and plans.

Sculptors have likewise a strong claim to an extended term of Copyright, from the peculiar nature of their works. It frequently happens that a sketch is made of a statue which is not commissioned for many years afterwards. Now, to insure his Copyright in such sketch, or first model, it seems that the artist must place his name and date upon it when he first publishes or exhibits it. The first fourteen years Copyright runs from that day, and may therefore expire before the work has been executed upon an enlarged scale, and consequently when so executed it would be entitled to no Copyright.

II. A sculptor can acquire no Copyright in his works for the purposes of *engraving;* a painter may. If well designed and engraved, the Copyright in a sculptor's works might be profitable to him in various ways; on the other hand, if they are badly designed and engraved, his professional reputation may be injured with those who have not had an opportunity of examining his works.

III. It seems doubtful whether a work of sculpture can be protected under the Designs Act, without the performance of the *conditions* I have noticed as being imposed under the Engraving Copyright Acts; and also those under the Designs Act, because the latter only extends to such works of sculpture as are "within the protection of the Sculpture Copyright Acts;" and no work can be brought within such protection without the performance of the conditions imposed by those Acts.

IV. The works of sculptors are most frequently pirated by a class of persons against whom the existing laws afford a useless remedy. These persons are generally indigent Italians, and other aliens, wholly unable to pay any costs or penalties which might be recovered against them. How defective the present Sculpture Copyright Acts are in this respect may be judged of by the fact that only *one* reported case arising under these acts is to be found. The instances of piracy are constant, but sculptors have wisely submitted to the invasion of their rights rather than embark in litigation with men of straw.

Report of the Select Committee on Arts and Manufactures.

In 1836 the House of Commons appointed a Select Committee "to inquire into the best means of extending a knowledge of the Arts, and of the principles of design, among the people (especially the manufacturing population) of the country; also to inquire into the constitution, management, and effects of institutions connected with the Arts." That Committee, by their Report, stated that they began their labours by dividing the subject of their inquiry into three parts; the two first being as to art as relating to manufactures; and the third, as to "the state of the higher branches of Art, and the best mode of advancing them." The Committee also stated that their investigations had been principally directed to the two first subdivisions of the subject, but they drew attention to the defective state of the law as affecting *Artistic Copyright*, especially as to works of sculpture, at the same time stating that "the expensiveness of a remedy through the courts of law or equity is a virtual bar to invention, and almost affords impunity to piracy "in Art;" that a system of *registration* appeared to be indispensable; and concluded their Report thus:—"It will give your Committee the sincerest gratification, if the result of their inquiry (in which they have been liberally assisted by the artists of this country) tend in any degree to raise the character of a profession which is said to stand much higher among foreign nations than in our own; to *infuse*, even remotely, into an industrious and enterprising people a love of Art, *and to teach them to respect and venerate the name of 'Artist.'*" Parts one and two of the Appendix to this Report contain a considerable amount of interesting and important evidence relating to Artistic Copyright. The Useful and Ornamental Designs Acts were subsequently passed; but, with the exception I have already noticed as to works of sculpture, our laws of Artistic Copyright still remain unaltered, except as to international rights, which I shall notice presently.

The passing of the Literary Copyright Amendment Act in 1842 was mainly attributable to the generous and unwearied exertions of the distinguished and noble-hearted author of "Ion," the late Hon. Mr. Justice Talfourd. In a letter I received from him in 1853, after noticing "the necessity of a complete revision of the confused and ineffective statutes" relating to Artistic Copyright, he says, "in the first Bill which I introduced into the House of Commons, I included a series of clauses on this subject; but I subsequently, by the advice of Sir Robert Peel, confined the measure to Literary Copyright, as he thought that the difficulties attendant on the question between artists and the patrons of Art would only be solved by a Select Committee; and as this was a subject on which he was personally sensitive, I found it necessary to adopt his advice, or to encounter his opposition, which must have been fatal. I always, however, cherished the hope of bringing the subject before the Legislature until I ceased to be one of its members; and I shall rejoice if some one possessed of more influence should be induced to move for a Select Committee on the Statutes."

I have noticed this letter because it proves that its generous writer did not neglect the interests of artists, as has been supposed, in his long battle in the House of Commons to obtain an amendment of the laws of Copyright. It also proves that he, as well as one of the greatest British statesmen, the late Sir Robert Peel, knew and admitted the necessity for an amendment of our Artistic Copyright laws.

III. *The British International Copyright Laws.*

These laws consist of:

1. The Act of 7 Victoria, C. 12, 1844.
2. The 15 Victoria, C. 12, 1852.
3. And the various Conventions and Orders in Council made under the above Acts.

Before entering upon any notice of these Acts, &c., it seems desirable to state, that by the law of England, as it existed prior to the passing of any International Copyright Act, no Copyright could be acquired in the British dominions in respect of any literary or other work which had not been either *first* published there, or simultaneously with its first publication in any other State. The consequence of this principle of our laws of Copyright was to deprive *aliens*, as well as British subjects, of any Copyright in their works in every case where they were first published in any foreign State.

1. This injustice to the rights of intellect was at length partially removed for the first time in 1838. The Act then passed was repealed in 1844, by the 7 Vic. cap. 12, which enables Her Majesty, by Order in Council, to direct, as to books *and works of Art*, which shall be first published in any foreign country, to be named in such Order, that the authors of such books and works of Art, and their assigns, shall have the privilege of Copyright therein to be stated in the Order in Council, not exceeding that to which authors of similar works first published in the United Kingdom are entitled; but no such Order was to have any effect, unless it states that *reciprocal* protection has been secured by the foreign power, to be named in such Order, in favour of British Copyright Works. By this Act the benefits of, amongst others, the British Engraving and Sculpture Copyright Acts are extended and apply to such of the works named in the Orders in Council as such Acts shall be applicable to; but no such International Copyright was to be acquired, unless the work in respect of which it is claimed shall have been *registered* at Stationers' Hall within the period to be specified in the Order in Council.

2. In 1852, the 15 Vic. cap. 12 was passed, which recognizes a Copyright Convention then made by Her Majesty with France, and extended the Engraving Copyright Acts "to prints taken by lithography, &c."

3. All the International Copyright Conventions which have been entered into by the British Government stipulate "that no person shall be entitled to such protection as aforesaid, unless he shall have duly complied with the laws and regulations of the respective countries in regard to the work in respect of which such protection may be claimed." This stipulation applies to all descriptions of Copyright Works included in the Conventions.

International Copyright Conventions have been entered into by Her Majesty with the *eleven* following States, and in pursuance of the powers contained in the above mentioned Acts. Orders in Council have also been issued in accordance with such Acts and Conventions.

		Population.
1. With Prussia, in 1846 and 1855		17,202,831
2. Saxony, in 1846		2,039,075
3. Brunswick, in 1847		269,213
4. The Thuringian Union, in 1847		958,941
5. Hanover, in 1847		1,819,777
6. Oldenburg, in 1847		187,163
7. France, in 1851	36,039,364	
Colonies	3,506,218	
		39,545,582
8. Anhalt-Dessau-Coethen, and Anhalt-Bernbourg, in 1853		168,325
9. Hamburgh, in 1853		216,831
10. Belgium, in 1854		4,530,228
11. Spain, in 1857	14,162,219	
Colonies	4,528,633	
		18,690,852
Total population of these States*		85,728,818

I have already noticed that the Act of Parliament which authorises Her Majesty by Order in Council to enable *aliens* whose works are first published out of the British dominions to acquire Copyright there, expressly enacts that no such Order shall have any effect, unless it states that *reciprocal* protection has been secured by the foreign power, to be named in such Order, in favour of British Copyright Works.

It is a portion of the Prerogative of the Crown to enter into Conventions with foreign States. All those entered into by Her Majesty, as to International Copyright, expressly stipulate that from the date when such Convention "shall come into operation *the authors of Works of Literature or of Art*, to whom the laws of either of the two countries do now or may hereafter give the right of *property* or Copyright, shall be entitled to exercise that right in the territories of the other of such countries for the same term, and to the same extent, as the authors of works of the same nature, if published in such other country, would therein be entitled to such right, so that the republication or piracy in either country of any work of Literature or of Art, published in the other, shall be dealt with in the same manner as the republication or piracy of a work of the same nature first published in such other country; and so that such authors in the one country shall have the same remedies before the courts of justice in the other country, and **shall enjoy in that** other country the same protection against piracy and unauthorized republication, as the law now does or may hereafter grant to authors in that country." Also that the terms "works of Literature *or of Art*," employed as above, "shall be understood to comprise publications of books, of dramatic works, of musical compositions, *of drawing, of painting, of sculpture, of engraving, of lithography, and of any other works whatsoever of Literature and of the Fine Arts.*"

All the Orders in Council founded on these Conventions also recite that a treaty has been concluded between Her Majesty and the Sovereign of the foreign

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* See the *Almanach de Gotha* for 1858.

State named therein, "whereby due protection has been secured within (such foreign State) for the benefit of authors of books, dramatic pieces, musical compositions, drawings, paintings, articles of sculpture, engravings, lithographs, and any other works of Literature and of the Fine Arts, in which the laws of Great Britain and of (such foreign State) do now or may hereafter give their respective subjects the right of property or of Copyright."

As to the Artistic Copyright Laws of the above-mentioned Foreign States.

Inasmuch as Orders in Council in favour of International Copyright are only legal when *reciprocal* protection is therein stated to be secured in favour of British Copyright Works within the territories of the foreign power mentioned in such Order, it would have been much more satisfactory if the Conventions entered into by Her Majesty had defined what works are the subject of Copyright within the territory of each of the States which is a party to such convention. What are "works of the Fine Arts" according to the laws of the *Foreign* States in question? Upon this point the Conventions contain no certain information whatever.

By Resolutions of the Diet of the Germanic Confederation literary productions of all kinds, as well as "*works of art*," are protected from multiplication, by any mechanical means whatever, without the consent of the author or his assignee of the *original* work. This general law as to Copyright is binding on all the States composing the Confederation, but does not appear to preclude them as sovereign states from making or altering their own laws of Copyright if not inconsistent with the Resolutions of the Diet.[*] The term of Copyright granted by the Diet is now extended to the artist's life and thirty years afterwards.[†] All the German States which have entered into Copyright Conventions with Her Majesty are members of the Confederation, and, with the exception of Prussia and Saxony, I cannot ascertain that any of them have any special law of Copyright.

The Prussian Code of Copyright, passed in 1837, has been eulogised by a distinguished French jurist as the most complete in existence on the subject.[‡]

As a legislative enactment it appears to be so; but it is by no means so liberal or just as the laws of France in favour of literary and artistic productions. The Prussian Code expressly prohibits the reproduction of *drawings* or *pictures* by engraving or lithography, coloured impressions, &c., &c. It also prohibits the reproduction of sculptures of all kinds during the period for which the Copyright is granted, and which remains the property of the artist so long as the original work belongs to him; but when the artist parts with his work, in the absence of any special contract with the artist to the contrary, the right passes with the possession of the original work.[§] The term of Copyright accords with that granted by the Diet of the Germanic Confederation, namely, for the artist's life and thirty years afterwards.[||]

The Saxon laws of Copyright also give a similar term of protection to artists in respect of the reproduction of their works.[¶] The French *Code* on the subject of Copyright generally, and especially as to that which relates to works of Art, is of a very simple character; but a long series of decisions of the courts have gradually extended the meaning of the language of the Code, until it may be said to include not only drawings, paintings, and sculpture, but also engravings of all descriptions, and in all kinds of materials.[*] M. Rénouard, in treating upon the French laws of Artistic Copyright, says, "*Copyright* (*le droit de copie*) belongs to painters, designers, and sculptors in their productions, as well as the corporeal property of these productions themselves. That an artist may distinguish between these two rights; that he may sell his original picture, and retain the right to engrave or copy it; that he may sell the right to engrave and retain the proprietorship in the original; that he may sell these divers rights to different persons is what no one would for an instant doubt."[†] By a decree of 1852, it is declared that the piracy on the French territory of works published abroad, and mentioned in Article 425 of the Code-penal, shall constitute an offence; also the importation and exportation of pirated works generally. *Alien* artists, &c., therefore, now enjoy in France the same protection, in respect of their works, as if they were French subjects, although such works are not first published there. By a decree of 1793, amended in 1854, the term of Copyright granted in France is not only for the artist's life, but that of his widow, and also for the artist's children during thirty years from the death of their surviving parent; if the artist leaves no children, then it vests in his next of kin for ten years.

The Belgian laws of Artistic Copyright appear to extend to the same objects of Art as the French; but the utmost term of Copyright allowed in Belgium is for the author's life, and twenty years afterwards.[‡]

The Spanish law affords to painters and sculptors protection in favour of the reproduction of their works by engraving or any other process. This Copyright continues during the artist's life and for fifty years afterwards.[§]

By the Copyright laws of Germany, France, Belgium and Spain, as regards the productions of painters, their *pictures* are wisely made the primary objects of protection:—under the British Engraving Acts the *engravings* from pictures are made the primary objects. This radical defect in our laws can only be remedied by repealing all the existing Acts on the subject, and passing such a new and well-considered measure as will, at least, put our laws upon a footing of equality in justice with those of the foreign States who have entered into Conventions with her Majesty.

In conclusion, I will only add the following observations upon the existing laws of British Artistic Copyright:—

1. That they afford the producers of works of Art no sufficient protection against the piracy of their productions.
2. That the purchasers of works of Art are in the same position.
3. That in consequence of the defective state of our laws of Artistic Copyright, they afford a premium for the manufacture of piratical works.
4. And lastly, that the International Copyright Conventions entered into by Her Majesty, being based upon the principle of *reciprocity*, our defective laws are most unjust towards the subjects of France, and all the other States who have entered into such Conventions, because their laws afford British artists an amount of protection in favour of their works which far exceeds that which is obtainable by artists, either native or foreign, under the British laws of Artistic Copyright.

D. ROBERTON BLAINE.

Temple, 6th January, 1858.

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[*] *Rénouard's Droits d'Auteurs*, vol. i, p. 280 et seq.

[†] *Blanc et Beaume's Code general de la propriété littéraire et artistique*. p. 222, et seq.

[‡] *Rénouard's Droits d'Auteurs*, vol. i., p. 268.

[§] *Ibid*, vol. i., pp. 272, 273.

[||] *Blanc et Beaume's Code general de la propriété littéraire et artistique*, p. 292.

[¶] *Ibid*, p. 560.

[*] *Rénouard's Droits d'Auteurs*, vol. ii. pp. 78 et seq.

[†] *Ibid*. pp. 300 et seq.

[‡] *Blanc et Beaume's Code general de la propriété littéraire et artistique*, p. 214.

[§] *Ibid*. pp. 250, 251.

(B.)

ARTISTIC COPYRIGHT COMMITTEE.

Society for the Encouragement of Arts, Manufactures, and Commerce, Adelphi, London, W.C.
January 27, 1858.

SIR,—I have to request your attention to the resolutions below, passed by the "Artistic Copyright" Committee. This Committee has been formed by the Society of Arts in the hope that, by collecting facts, and by showing the mischiefs to which artists, and the purchasers of works of Art are liable, in consequence of the present defective state of the laws of British Artistic Copyright, Parliament may be induced to amend those laws. The Committee will be obliged by your early attention to the enclosed questions. In answering them it is suggested that you should *omit the names of persons* connected with the facts you state; you are also recommended to confine yourself to circumstances within your own knowledge, not giving those derived from the information of other persons.

The Committee request the favour of a reply not later than Thursday, the 4th of February.

I am, Sir, your obedient Servant,
C. L. EASTLAKE,
Chairman of the Committee.

Resolved, That the inquiries of this Committee be directed,—

1. To ascertain the existing laws of British Artistic Copyright, and the chief defects of those laws.
2. How those defects affect the interests of producers of works of Art.
3. How they affect the interests of purchasers of works of modern Art.
4. How they affect the interests of the public and the promotion of the Fine Arts.
5. How they affect the subjects of those foreign States with whom Her Majesty has entered into International Conventions; and what the laws of those States are as affecting Artistic Copyright.
6. To obtain instances of fraudulent or wrongful acts relating to works of Modern Art.
7. And lastly, to suggest such remedies as appear best calculated to amend the defects of our Artistic Copyright laws.

By order,
P. LE NEVE FOSTER,
Secretary.

(C.

SOCIETY FOR THE ENCOURAGEMENT OF ARTS, MANUFACTURES, AND COMMERCE.

THE ARTISTIC COPYRIGHT COMMITTEE.

1. When the pictures of British artists command good prices, is it a common practice that *spurious* copies of such pictures are made?
2. Are such spurious copies usually made of the same size as the original pictures, and as closely as possible to resemble them?
3. Where the original picture has been *signed* by the artist, is it a common practice to imitate or add such signature upon the spurious copies of it?
4. Do you know, and will you state, any instances where spurious copies of pictures have been shown to you for your opinion thereon; or have been sold, or offered for sale, or exchange, as *original* pictures?
5. Did the persons so selling, or offering for sale or exchange, such spurious copies know them to be so? or had such persons, in your opinion, reasonable cause for believing them to be spurious copies?
6. Do you know, and will you state, any instances where artists have, at the time of selling their pictures, expressly reserved their Copyrights therein for the purposes of engraving, and yet have subsequently been deprived of the profits of such Copyrights; and how were they so deprived thereof?
7. Do you know, and will you state, any instances where artists have *not* reserved their Copyrights when they sold their pictures, and where the proprietors thereof have either sold the Copyrights for the purposes of engraving, or gratuitously allowed them to be engraved without the consent of the artists who painted them, and without giving them any remuneration for the Copyright?
8. Do you know, and will you state, any other facts which in your opinion are calculated to promote the objects of this Committee, as shown by the resolutions sent herewith, either as relating to works of sculpture, architectural designs, pictures, drawings, sketches, engravings, or photographs?
9. Will you suggest such alteration of our existing laws of Artistic Copyright as, in your opinion would prevent the continuance of any and which of the grievances to which the present state of such laws now exposes sculptors, architects, painters, engravers, publishers, and purchasers of works of Modern Art; and would likewise tend to the promotion of the Fine Arts in the British dominions?

(Date and Address.) (Name.)

N.B.—The spaces left as above are for your answers. If not sufficient, you can write them upon a separate paper, numbering each of your answers to accord with the number of the question. In answering these questions it is suggested that you should omit the names of parties connected with the facts you state; you are also recommended to confine yourself to circumstances within your own knowledge, not giving those derived from the information of other persons.

SIXTEENTH ORDINARY MEETING.

WEDNESDAY, MARCH 24, 1858.

The Sixteenth Ordinary Meeting of the One Hundred and Fourth Session, was held on Wednesday, the 24th inst., Joseph Glynn, Esq., F.R.S., Vice-President, in the chair.

The following Candidates were balloted for and duly elected members of the Society:—

Bowley, Robert Kanzon
Brooks, Shirley
Dyce, William, R.A.
Paule, Joseph Michell
Rider, Joseph
Thorman, Edward H.

The following Institutions have been taken into Union since the last announcement:—

457. East Lancashire Union.
458. Selby Mechanics' Institute.

The Paper read was:—

ELECTRO-MAGNETISM AS A MOTIVE POWER.

By THOMAS ALLAN.

It is superfluous to enumerate the many material advantages electro-magnetism has over steam, from its great simplicity, compactness, constant power at all velocities, and being entirely under control. With no reservoir of danger as in the steam-boiler,—always ready for action, without previous consumption of materials, as in getting up steam,—and no waste in freightage, as in carrying coal.

The two points to solve in the use of electricity as a moving power are its application and economy.

Hitherto, every application of electro-magnetism that has been put to a practical trial has been at variance either with the laws of electricity or mechanics.

It, therefore, now only remains to be shown, that electricity, the *most powerful agent in nature*, by an application in *conformity* with its known laws and properties, can be rendered available as a motive-power.

The power of electricity, when applied in the form of an electro-magnet, is wonderfully great from comparatively small means; but its dynamic effect decreases so rapidly through the intervening space, being "inversely as some unascertained power of the distance much higher than the square," that the range of the maximum effect or valuable portion of the dynamic force, with a consequent minimum of consumption, extends to so small a distance as to be of no real value in mechanics. The great problem to solve has been to contrive such an arrangement of parts as to convert this maximum of the dynamic effect, through a range, although unavailable in itself, into *stroke*, or such an extent of motion as to be available and of practical value as a motive-power.

In the plans and arrangements of these inventions, the maximum portion, only, of the dynamic effect, is applied, and by the mechanical arrangement of parts, is successively and continuously brought into action in a direct form, in accordance with the laws of electro-dynamics. When thus applied, there is no loss of the primary electric force, and any amount of *power*, and any *length* of *stroke*, can be obtained.

The cost of electro-motive power has generally, though erroneously, been considered so great as to render electricity as a motive-power less profitable than steam. But this has arisen from the misapplication of the electro-magnetic force, not from the necessary consumption of the electric materials, which consumption is inversely as the dynamical ratios of the force.

The introduction of electro-motive power, will be an event of great national importance, tending to alter the value of every article of commerce and manufacture, as steam has done since its adoption.

It is a due consideration of the foregoing summary of a most interesting and important problem in physical and mechanical science, still progressive, that forms the subject of the present paper; and although the final solution is still to be worked out, I will endeavour to detail some of the obstacles, as well as the *modus operandi* entered upon, so far as they have progressed, to effectuate the same.

Notwithstanding the evident vastness and importance of this subject, and the enlightenment of the present age, it is not a little curious to observe with what stubborn resistance and discouragement any such invention or innovation upon vested rights or the routine of bye-gone years is hailed. Electro-motive power, *par excellence*, seems to meet with fully more incredulity and disbelief in the mind of man now than steam or gas did in their first days. To mention the subject even seriously is to be considered next thing to a lunatic, and the signal to have raised against one, a barrier of apparently insurmountable difficulties, the fancies and jealousy of vested interests, the disappointments of various crude and empirical attempts, to say nothing of the dogmas of some professors of a sister science. Some such, with minds of but small powers of philosophical conception, are too apt, with unbecoming flippancy, to crumple up a whole question with a wizard-like *ipse dixit* of impossibilities as to cost, based on anomalous and untested assumptions.

Professor Liebig, in his "Familiar Letters," goes much out of his way to run a tilt against electro-motive power, and patronisingly remarks "that electro-magnetism as a motive-power is engaging great attention and study; wonders are expected from its application to this purpose; such expectations may be very attractive, indeed, they must be so, otherwise no one would occupy himself with them, and yet they are altogether fallacious; they are illusions depending on the fact that those who entertain them have not made the necessary comparisons and calculations." He then reminds his readers "of what chemists denominate "equivalents," and likewise that zinc in the battery is burned (oxidised), a consequence of which action is the production of an electric current." We are then informed that "out of nothing no kind of force can arise," and "if we were to burn the zinc under the boiler of a steam-engine, consequently in the oxygen of the air instead of in the galvanic pile, we should produce steam and get a certain amount of force," but that "we must still recollect that zinc can be represented by an equivalent weight of carbon (as coal), so that, according to the experiments of Despretz, six pounds weight of zinc, in combining with oxygen, develope no more heat than one pound of coal, consequently, under equal conditions, we can produce six times the amount of force with a pound of coal as with a pound of zinc." There is in all this no small amount of confusion of ideas pegged upon the experiments of Despretz which cannot fail to mislead, having nothing to do with the mechanical force of magnetism produced by a given amount of current electricity.

It is a most unfortunate doctrine, but also a practical absurdity, to state that zinc cannot give out more power than the coal required to melt it. Doubtless a given amount of zinc, combining with oxygen, would not eliminate more heat than would overcome that affinity, but there is no such relation of heat to electricity as to make the mechanical power of the one the measure of the mechanical power of the other. Whatever may be the analogy between heat and electricity, they must be considered as distinct forces in their mechanical relations. In the combustion of coal, heat only is the motive-power developed, whereas in the oxidation of zinc in the battery, both heat and electricity are developed, the latter only being the motive force.

Prof. Page, on this subject, remarks, "The absolutism of forces regulating affinities may be interesting as a matter of speculation, but as furnishing a practical estimate for the amount of mechanical or available power, it cannot stand, and necessarily involves the unwarrantable assumption that the whole power or inherent force may be eliminated and rendered available in each case." But Liebig goes still further. He maintains that the heating power of the current is the equivalent of the mechanical power through electro-magnetism, or, in other words, that the heat developed by the passage of the current, ought to raise steam enough to furnish a power equivalent to the electro-magnetic power of the same current, and from the fact that the mechanical force derived from the steam raised by the heating power of the current is so small, compared with that obtained by the combustion of coal, he arrives at the conclusion that electro-magnetic power "can never be used."

The cost, however, of such a power is but a subordinate question, as other and more important points have to be settled first, before the cost can be fairly ascertained.

The speculation is thus pushed up to a point where facts are brought to bear upon it, and fortunately where facts enough can be adduced to subvert the whole doctrine.

Desiderating cause and effect, and taking a practical survey of the whole subject, the problem appears to resolve itself more into one of mechanics and mathematics, than of chemical equivalents, for, let the cost of a given amount of electricity be what it may, we must see how that is to be economically applied to produce magnetism, in the first instance, and, again, how the dynamic effect of magnetic attraction is to be applied to machinery in accordance with its known laws, and that, too, to produce such an amount of motion or stroke as will be available to motive machinery.

It is to this end, then, that those who choose to think for themselves are not turned aside from the investigations of such a subject by the various discouragements thrown in their path, but, heedless of the dried leaves of theory of those who, without the comparative anatomy of thought, beg the question, seek to apply the dynamic effects of magnetism to machinery.

The power exhibited by electro-magnetism, though very great, extends through so short a space as to be practically useless in mechanics. A powerful magnet might be compared, for sake of illustration, to a steam-engine, with an enormous piston, but with an exceedingly short stroke, (*per se*) unquestionably a bad arrangement, or, rather, no arrangement at all, yet, if such mechanical arrangements could be devised, so as to take advantage of this enormous piston, and, at the same time, to produce stroke, without militating against that power or increasing consumption, then we would have a machine containing the elements of power and motion, without which the question of the cost of producing the electricity and, still more, its application to produce magnetism, are irrelevant and secondary in the first stages and practical investigations as to producing power and motion in a machine by such agency.

It has, consequently, appeared to me that in working out this problem it should be considered in three distinct parts.

First. How to apply the force of magnetic attraction economically in a machine, taking advantage of its maximum force only with a consequent minimum of consumption, and continuing that power to any length of stroke required.

Second. How to establish the right proportions between a given amount of electricity and the length and diameter of a magnet, so as to produce the maximum of magnetic effect with the minimum of electrical consumption.

Third. The economical production of electricity and working of the battery.

Before going into any questions of application, it would be profitable to inquire into the peculiarity of the forces about to be dealt with as a guide, to the mechanical arrangements necessary to produce motion and power, with economy in consumption.

The static force of magnetism is, to the casual observer, something immense from apparently very small means; whilst the dynamic effect, which is what we have to deal with, and render available as a moving power in mechanics, is a force peculiar to itself, and differs from all others we have in nature, and therefore requires to be considered *per se*, without reference to, and regardless of, other forces as applied to motive-power.

The dynamic effect of magnetic attraction decreases in the inverse ratio of the squares of the distances, as will be seen if the geometric curves of that force be drawn, measured from some focal point within the surface of the magnet, and as the consumption of zinc in the battery by the electricity so produced is in accordance with the time taken for the attracted body to pass through a given space, it follows that at a certain distance from the magnet where the force produced is least the consumption is greatest proportionately, and on approaching the magnet where the force is greatest, the consumption is least; in a working engine, going at an even speed, the time being equalised, the consumption for each distance passed through would be the same; it will, therefore, be sufficient as a question of economy, to consider the time for equal spaces passed through, as equal, although of the attractive force of itself without a resistance, it may be said, however paradoxical it may appear, that the force, and therefore the velocity, being inversely as the squares, the consumption must be inversely as the forces.

The curve of dynamic effect drawn from the surface, and the calculations of the squares also, shows that if a magnet at an inch distance will sustain a weight of one pound, at half an inch it will hold four; at a quarter, sixteen, and so on. If this curve be further carried out, and the whole distance or range of attractive powers divided into tenths; the sums representing the means of the forces through each increment or tenth of the whole distance respectively, showing that if the mean force of the tenth nearest the magnet be 1,000 lbs., that of the tenth furthest off will only be 3 lbs., and, as we have shown before, when the keeper or material to be attracted, moves at an even speed (as in an engine in motion), there would be as much consumption of electricity and consequently zinc to produce the 3 lbs. of power, as to produce the 1,000.

Calculating the dynamic effect from the surfaces of the magnets, by the laws of the squares inversely, is only an approximation to the ratios of decrease in the dynamic effect, for, as before mentioned, the forces of attraction must be calculated from some focal point within the surface of the magnet, depending for its position on the length and diameter of the magnet —this unknown point is easily ascertained, whence the mean dynamic power of that portion of the magnetic attraction that has been arranged to be applied and utilised in the engine can be measured and ascertained—so as to calculate the theoretical horse-power of the engine.

In the arrangements adopted to utilise these peculiar forces economically, and likewise obtain stroke, it was necessary, to this end, to form magnets with 4, 6, or 8 poles screwed on flat plates, so as to apply the attractive force in a direct form, and thus by the very simple arrangement of a piston rod passing through the centre of this group of magnets, in a line at right angles to their plane a keeper resting on a shoulder on the piston rod would meet the surface of the magnets in a plane parallel to itself; the keeper thus not only embraces the full sphere of magnetic attraction, but, by such an arrangement, as the force of magnetic attraction decreases so rapidly with the distance, it is not economical to utilize or apply more than that portion of the attractive force that is most effective, and so not expend the electricity on that which inversely, as the squares, is comparatively of little value, and only produced with a larger proportionate expenditure.

In this arrangement, when the first magnet in the series has, by attracting the keeper, operated on the piston rod, the stroke or onward motion of the rod is continued by a similar operation of the second magnet placed below the first, and so on with the third and fourth. The onward motion of the shaft is then continued by a second rod on a second crank in like manner to the first, and so on by a third and fourth.

It will thus be seen that the motion is continuous, not reciprocating, analogous to the overshot water-wheel —each magnet coming into play one after the other— and that it is that portion of the magnetic attraction only which, proportionately to the power obtained, consumes the smallest amount of electricity, and consequently of battery consumption, that is applied as a motor in engines constructed on these principles. It will not be difficult to perceive by the foregoing how the great and most important results of the whole problem, viz., the economics, may be completely counteracted by a misapplication of this peculiar dynamic effect, whatever it may have cost to produce it; and to illustrate this more clearly, a comparison might be made between the principle of application in the rotary engine (Jacobi's) and the present arrangements. The rotary engine has hitherto been the most favorite form among the various experimental appliances in electro-magnetism as a motive power, but in this mode of application, besides a variety of electrical disadvantages, it will be easily seen, having to apply the attractive power in a slanting direction, in place of direct, that there is of necessity a great waste of the magnetic force, that it is the upper portion of the curve only that can be applied effectively, whilst as the magnet has to be demagnetised in time to allow the keeper to pass, the maximum of the force has to be abandoned. On the other hand, in the present arrangements, the application being direct, it is the maximum only that is utilised.

To carry out the comparison still further in the rotary system, about 8-10ths only of the dynamic curve can be made available, the eight upper sections as against the two lower in the present system, where attraction is direct. This would give in the former a mean force of 12 through a given space, as compared to 555 in the latter, with an equal consumption of electricity, making a difference in cost as to the power utilised as 46 to 1, and even supposing the rotary system could be practically worked so as to utilise 9-10ths of the curve, the ratio of cost would still be in favour of the latter as 24 to 1.

Theoretically, this would be a great stride in the right direction as to cost, and almost conclusive, if we could depend on a statement in a paper of Mr. Hunt's to this Society some years back, that electro-magnetism as a motor was impracticable, the cost being in an engine on Jacobi's principle a hundred-fold as compared with steam. Upon this showing, so far as the utilization of the magnetic curve goes, all else being equal, the relative difference in cost of steam and electro-magnetism as a motor becomes reduced to something within reasonable bounds.

In the second part of the question, as to the proper proportions of parts so as to produce the maximum of magnetic effect with the minimum of electrical consumption, there is much still to be investigated, as there seems to be no law yet worked out that would be a true guide on this subject. I have given much consideration to this point, and have obtained many practical data toward the great question at issue.

As an instance of misapplication of current force, I may mention an extreme case, indicating by comparison, great consumption or waste and little effect. A magnet with an electrical consumption of 352, gave out a supporting power of 2¾ cwt., at half-an-inch distance from the surface of the magnet, whilst another with the same battery, and a consumption of 512 (owing to the shortness of the circuit) only gave out an attractive power of 48 lbs. at the same distance. In another case, where two magnets of different diameters and circuits consumed exactly the same amount of electricity, the one gave out an attractive force at a certain distance of 97 lbs., where the other gave 476 lbs. at the same.

These two cases, although extreme ones, clearly show where the important question of cost, to a certain extent, lies, and that, without complete investigation, and the establishment of well-defined data, as to proportions relatively, so as to produce the maximum magnetic effects with the minimum of electrical consumption, the economics of the question, as regards this section of it, will still be a varying quantity, and, as hitherto, greatly left to chance.

In the third portion of the question, viz., the economical production of electricity, it may with safety be remarked that, with all its improvements, the battery is but a clumsy affair; what, then, may we not expect from a series of scientific researches into the as yet undeveloped secrets of this marvellous element.

It must be obvious, from the foregoing, that, as I stated at first, electro-magnetism as a motive power was not simply a question of chemical equivalents or of producing electricity cheap, but more essentially to ascertain the economical application of it to produce magnetism, in the first instance, and then to contrive such an arrangement of parts as will produce stroke or motion in a machine along with an economical application of that force when so produced. It, therefore, follows that, without a properly combined investigation of these three questions as a whole, and an application of forces in accordance with their known laws, it would be but a waste of time, barren of results, as appears to have been the case hitherto with many expensive experiments made in various countries, disregarding this triplicate application of dynamics in mechanical and physical science.

I have not in this paper entered into the mass and minutiæ of detail, as only tending to confuse, and other obstructions that yet stand opposed to ultimate and complete success, but have treated the subject generally, and as a progressive one, so as to bring out with as much force of character as possible the broad features of this interesting problem, and the main principles of the applications of the forces by which it is ultimately to be solved.

I have only now to repeat what I started with, that "hitherto every application of electro-magnetism that has been put to a practical trial, has been at variance either with the laws of electricity or mechanics," and also, that "the power of electricity, when applied in the form of an electro-magnet, is wonderfully great from comparatively small means, but its dynamic effect decreases so rapidly through intervening space, that the range of the maximum, with a consequent minimum of consumption, extends to so small a distance as to be of no real value in mechanics; the great problem to solve is how to contrive such an arrangement of parts as to convert this maximum of the dynamic effect through a range, although unavailable in itself, into *stroke*, or such an extent of motion as to be available and of practical value as a motive-power."

Confident, therefore, that the principles on which the mechanical and physical applications of the electrical and magnetic forces are based, and as enunciated in the foregoing, to obtain the elements of motion and power in a machine by such agencies, are correct, in fact, having not only hit upon the right principle, but laid the foundation for its adoption, I feel every incentive, and a strong impelling power besides, to carry forward such investigations, despite all discouragements, feeling assured that the difficulties in details will, in due time, yield to further knowledge and experience of the phenomena of the peculiar forces under investigation, so as to render electro-magnetism as a motive-power a practical and useful agent in the various works of man.

We have witnessed the great revolutions effected by steam within the last forty years, both on sea and land; it is an agent continually advancing, exercising incalculable influence on the wealth, and not less decidedly on the moral progress of nations—in one word, contributing to the march of civilisation throughout the globe—furnishing the apt illustration of the oft-repeated adage, "Knowledge is power." Rapid as have been the advance and expansion of steam-power, with its manifold applications to the wants of mankind—remarkable as its progress may still be, it cannot be disguised that a new motive power is perhaps the great desideratum at the present stage of mechanical science. There is a growing want felt; the requirements that have been mainly evolved through steam itself having apparently outstripped the agency that has called them into being.

The introduction, therefore, of electro-motive power—its bearings upon all questions of commerce, manufacture, and civilisation at home and abroad, opens up to the contemplative mind of the political economist a wide field of speculation, and becomes a question of great national importance, tending as it must to further alter the relative value of every article of commerce and manufacture as steam has done since its introduction.

If, then, with electricity, we can produce motion and power in a practical and useful form, and so carry forward for the benefit, advancement, and civilisation of mankind, that good work so happily commenced by steam, what a grand problem would then be solved.

The unphilosophical manner in which some people allude to electro-motive power superseding steam, is of a nature greatly to excite prejudice against a due consideration of the political economy of such agencies. Common sense, and a proper deference to the philosophy of common things, indicates that electro-motive power will no more supersede steam than steam the water-wheel, as each and all have their own field of operations and functions to fulfil peculiar to themselves; the cost, the power, and the various advantages of either being relative to the requirements of their respective applications as motive forces.

It will suffice to give a brief sketch of some of the many advantages such a motive-power has over steam. A motive-power without fire at once stamps it with peculiarities due to itself alone, and indicates a field of operation in which it can have no competitor. It can thus be applied, where the cost of insurance precludes the use of a steam-engine, such as the hoists in the large Manchester warehouses, where they have not been built on purpose. There are also a variety of other instances where a small engine may be used, as in each flat of a mill, thereby getting rid of all the communicating gearing, the first cost of such gearing, the power to work the same, as also the saving when the mill was working half time, the dinner hour, and in getting up steam. Its application, likewise, as a small power, to house and workshop purposes in town and country, where steam does not venture to intrude as yet, or is entirely disallowed, for various reasons besides fire and the cost of insurance. England, with its cheap fuel, might at first sight appear as the most barren field for its operations; but from its apparent completeness as a small power, it becomes applicable as an auxiliary agent, in a host of conditions where steam is quite inapplicable; it may be said it has a wide field of operation peculiarly its own; as a small power, there is no reason to suppose that it is inapplicable to larger powers; although it might be rash in its present state of infancy to predicate what its future might be; for, as applied to locomotion, and as an auxiliary screw in our large merchant ships, there is a great point to be gained that is but partially attained by steam; one other value in the applications of such a power is as a species of division of labour, as when it will suit the requirements of the case instead of being combined into one large engine, as in the steam-engine, it may be applied as several smaller ones and thus the power be brought close to the work and not lost in the friction of transmission from a distance. It would be endless to point out the various conditions where such a power would be applicable; this is best left to the mind of each man, in his own particular sphere of mechanics, and doubtless each will, in his own way, see a useful application of such a power, when the management of the battery, &c., is reduced to that simplicity, that the man of the many can work and manage it as well as the man of the few.

Looking to the political economy of such a question as that of a new motive power, it is not surprising, notwithstanding the scepticism of empirical philosophers, that one should become an enthusiast in such a cause—feeling that the obstructions thrown in one's way are mere blocks of granitic ignorance to be hewn and removed aside by patience, perseverance, and investigation into the nature of things.

The new-born science, though still but little known, is gaining on us fast, and advancing with rapid strides into the business of every-day life.

In conclusion, it will be obvious how directly and immediately the application of this power could be traced to the physical principles before enunciated. It is one of the numerous instances in modern times in which physical philosophy has found an immediate practical result in the labours of investigation.

We must not, however, be too elevated with such achievements, for the triumphs of science should be ever regarded as manifestations of the working of a higher Providence, turning the development of new powers to the wants of mankind, and showing that as He has willed man's progress, so also He prepares the instrumentalities by which it is brought about.

DISCUSSION.

Mr. Hearder said he had listened to the admirable paper of Mr. Allan, with greater pleasure, perhaps, inasmuch as some fifteen or twenty years ago he was as great an enthusiast on this subject as Mr. Allan now appeared to be. It would, perhaps, be hardly fair to ask Mr. Allan the proportion which the power in the machine exhibited bore to the amount of electrical agents expended to produce that power, or the absolute amount of power which his machine was capable of developing. He would briefly remark upon some of the principles laid down by Mr. Allan, which to his (Mr. Hearder's) mind appeared as rather taken for granted than absolutely proved. Mr. Allan had stated that the magnetic attraction acted inversely as the square of the distance through which it operated. He (Mr. Hearder) did not know of any such law under the arrangements described by Mr. Allan. He knew that when a single magnetic bar was used, and a bar of soft iron was approximated to the end of it, the law described by Mr. Allan would be developed. The peculiar condition in this case was that the bar was capable of undergoing induction, without which attraction could not take place. If a single transverse section of the soft iron bar were cut off, for instance, like a wafer, and applied with its face to the end of the magnet, it would be scarcely attracted at all, and no such law would be discovered, the attraction even varying simply as the distance. But turn the disc, and apply its edge to be attracted by the magnet, and the attraction increases in a very considerable degree, simply in consequence of its length permitting inductive action to take place. But even here the law of the squares of the distances is not developed until the bar is of such a size and length as to admit of the greatest amount of induction. Therefore thick keepers were required with magnets of great power. With regard to the law of the squares, as connected with the horse-shoe magnet, if a piece of card be inserted between the keeper and the magnet, and the attraction force be ascertained, it will not be found that the insertion of two pieces of card will reduce that force to one-fourth; three pieces one-ninth, and so on. In all cases where attempts had been made to develop the law of the squares, it had been necessary to assume a focal point within the magnet, but after all, practically, the only available working space was that between the keeper and the end of the magnet, and it was to the variable conditions existing in the space that experimental inquiry should be directed. Most present were familiar with the name of Hjorth, of Copenhagen, in connection with this subject. That gentleman had lately constructed an electro-magnet of large size and considerable power on which he had experimented, and the result had disproved the truth of the law in question. He had indeed succeeded in obtaining an attractive power of some hundred pounds, at a distance of upwards of three inches. Between the two poles of a magnet there existed a mutual attraction, and the magnetic lines of force might be shown by the arrangement of iron filings on a screen. When a keeper was brought within a certain distance, these lines of force altered their direction, and were then concentrated on the keeper. On withdrawing the keeper to a greater distance, it would be observed that these lines of force were again changed, a portion of them leaving the direction of the keeper and acting between the poles of the magnet. The decrease of magnetic action upon the keeper in relation to its increased distance was thus curiously shown. If, however, the experiment was tried with another magnet, whose poles were at a greater distance from each other, the lines of force would be seen to assume a different direction at different relative distances of the keeper, and the direct magnetic action between it and the magnet would be maintained throughout a greater distance. Therefore, in all these experiments it was necessary to bear in mind the dimensions of the magnet and the distance between its poles. He was sure Mr. Allen would accept these few remarks in the friendly spirit in which they were offered, although they might not coincide precisely with the opinions he had expressed in his paper. Mr. Allan, like many others before him, had taken for granted certain laws which had been apparently well defined, but which he (Mr. Allan) had not ascertained for himself. He (Mr. Hearder) had fallen into the same error himself long since, and had been obliged to work out the problem for himself. He would remark that iron was only susceptible of a certain amount of magnetisation, and that magnetic development in iron, when high intensities were obtained, did not keep pace with the increments of electrical agency. He had ascertained these facts more than sixteen years since by the use of his (Mr. Hearder's) magnetometer, which had enabled him to determine the due proportion between the bulk of a magnet and its intended strength. He would conclude his remarks by hoping that Mr. Allan would pursue the subject with the success his talent and energy merited.

Mr. E. HIGHTON said he thought the Society was deeply indebted to Mr. Allan for his paper. At the same time he regretted that it did not contain any account of some of the most important elements essential to the use of electro-magnetism as a motive power. He was sorry to find that the author had omitted entirely to state the horse-power of the engine exhibited, and the kind of battery employed, the number of cells, the kind of metals and acids used, the distance between the metals, the length and diameter of the electromagnets, and the size and length of the wire surrounding them. He considered, without these facts being given, it was impossible to compare Mr. Allan's engine with those of other persons. He remarked, also, that one of the most important elements in the question had been entirely omitted, viz., the fuel consumed per horse-power, and its cost. Had such been given, a true comparison might have been drawn between the cost of steam-power and electromotive-power. He considered that, for motive-power of any kind, the materials found naturally in the earth should be used for consumption, or change of state, and not a manufactured article, such as zinc and acids, which must always be dearer than natural products. He compared the requirements of the steam-engine with those of the electro-magnetic engine. He observed that in the steam engine the materials employed to produce power were natural products of the earth, viz., coal and water, the latter costing little or nothing; whereas, in the electro-motive engine, the materials employed for producing power were all manufactured, and, therefore, much more expensive. He contended that the attention of parties advocating electricity as a motive power should first be directed to the discovery of some natural products of the earth to produce the electricity required, rather than to the form of machinery to convert the power developed to useful purposes. At present the cost of producing such power was a barrier against its use. He concluded by saying that he thought the thanks of the meeting were due to the author of the paper for his having brought the subject before the Society.

Mr. SIEMENS observed that the problem of applying electro-magnetism as a motive force had engaged the serious attention of natural philosophers ever since the time of Oersted's great discovery of electro-magnetism itself. The great force with which an electro-magnet resisted separation from its armature, naturally led to inquiries whether that great attractive force could not be made to act through a sufficient space to impart motion to a crank or other mechanism. The result of these researches—which had been conducted by some of the most able electricians, regardless of labour and expense—had been invariably the same, viz., machines working with great facility and speed, but of exceedingly small force compared to the consumption of zinc and acid in the battery employed. The knowledge of the nature of electricity, and of its natural relation to chemical action, heat, and dynamical effect, had been greatly advanced however in late years, and had furnished a general solution of the questions put forward by Mr. Allan. The power that could under the most favourable circumstances be developed by the combustion of a given amount of zinc in a battery, or of coal in a furnace, was proportionate to the amount of oxygen absorbed; but it so happened that a lb. of zinc absorbed only 6 measures of oxygen, whereas a lb. of carbon took up 33 measures in forming oxides. But carbon, when properly burnt, took up two equivalents, or 66 measures of oxygen, which gave it the advantage over zinc in the proportion as 66 to 6, *i. e.*, 11 to 1. Taking the cost of coal at £1 per ton, and that of zinc at £27 per ton, it followed that power produced by a perfect electro-magnetic machine would cost nearly 300 times more than the same power produced by a perfect caloric or steam-engine. It must, however, be remembered that neither the present steam-engine nor the best electro-magnetic engine ever produced, realised anything like the full theoretical result; but it could be shown that the relative loss of power in the electric engine was much less considerable than in the best steam-engines of the present day, and that consequently the latter left the greater margin for future improvements. Mr. Allan had met the theoretical objections to his engine by an indirect argument. He said that if the power produced bore a certain proportion to the electric current expended, then the attractive force of the electro-magnet upon the armature should be the same when in greater or less proximity to each other, where experience proved that the attractive force increased rapidly inversely as the distance, while the expenditure of the current remained the same. To his (Mr. Siemen's) mind, this only proved that there was a great waste of current (in addition to the necessary expenditure) when the armature was at some distance from the poles of the electro-magnet, and did not at least affect the theoretical question. With regard to the mechanical arrangement of the machine brought forward by Mr. Allan, he (Mr. Siemens) observed a serious loss of power that resulted from the sudden stoppage of the armatures in their descent. Mr. Allan produced, by this arrangement, much useless sound instead of useful mechanical effect. Mr. Highton had alluded to the possible employment of substances less costly than zinc for the production of electric currents. If such substances could be discovered in nature, he Mr. Siemens) admitted that the electro-magnetic engine might supersede the steam-engine for many purposes, but, in looking around him, he could not discover any substance in nature at all likely to answer the desired purpose, except it be coal itself. The substance in question must necessarily be simple, so as to be capable of combination with oxygen or other simple elements; but all things in nature were found in a combined state except the precious metals—sulphur and coal—(which might be taken for pure carbon for the present purpose). All these substances were remarkable for their repugnance to oxidation at the ordinary temperatures, and if carbon should ever be made suitable to take the place of zinc in an effective galvanic battery, it must be at very elevated temperatures. The liquids employed in such a battery would, probably, have to be salts, in a state of fusion instead of solution. It would, of course, be impossible to say whether a battery of such a description could ever be made available, but he (Mr. Siemens) felt convinced that the only chance of producing a practical electro-magnetic-power engine consisted in improving the means of obtaining the electric current, rather than in the mechanical contrivances for utilising it.

Mr. HENLEY said he had expended many hundreds of pounds of his own money, and several thousands of other people's, under various patents, in the prosecution of this subject, but he had never yet seen anything in the electro-motive power that could at all be brought into comparison with the steam-engine. He had made a magnet which would sustain the weight of 15,000 lbs.; but when the keepers were placed three or four inches from the magnet it would not exert a force of more than four or five pounds, and the cost of obtaining about half-horse power with such a machine was nearly £5 per day. He was, therefore, sceptical as to any practical advantages from the application of this principle. He might say that the machine exhibited that evening was the best he had ever seen. It would certainly be very advantageous for purposes where steam could not well be employed, and no one would rejoice more than himself to see it successfully carried out.

Mr. **Lawrence** would have been glad to have heard more from Mr. Allan as to the cost of working these machines, as that was, after all, the important practical part of the question. It would appear, from the statement of Mr. Siemens, that the cost, as compared with steam, was as 300 to 1; and, at that rate, to drive a locomotive engine by magnetic power, instead of costing 6d. per mile, as at present, would give a cost of somewhere about £15.

Mr. **Newton** said some twenty years ago, a machine, worked by electro-magnetic power, was sent to the house with which he was connected. It was upon the rotary principle, but, being a small and somewhat rough model, it did not work very well. There was, however, a certain amount of power got out of it, and, bad as it was, it satisfied him that there was a power to be obtained if effectual means could be discovered of developing it. A hundred years ago, the application of steam as a motive power was very little known, and it was the genius of Watt and Stephenson which had developed the capabilities of that power to its present enormous extent. He was much pleased with the machine exhibited that evening, and he thought a step had been made in the right direction. The observations of the various speakers applied rather to the cost of working than to the mechanical arrangements, and he thought that consideration had been too closely mixed up with the subject. He considered the first object was to find out the means of applying a power which was known to exist, and when that was accomplished attention might then be turned as to the best means of obtaining that power. The same objections were raised against the electric light when it was first introduced. The apparatus brought out at that time was very ingenious, and accomplished all that was required with the exception of cost. It was the same with the machine before the meeting. He thought the two questions ought to be kept separate from each other. First let the fact be established that such a motive power did exist, and he believed that genius and science would find out the means of supplying it at a cost which would render it practically useful.

Mr. **William Hawes** thought it was one of the first duties of this Society to encourage the exhibition of machinery—no matter how novel or at what cost it was worked. Although he was one of those who thought that the machine before the meeting was no practical advance upon what was known before, still the exhibition of such a machine, and the new ideas it gave rise to, tended to promote progress. He felt bound to say he did not think that, in the present instance, success was likely to result from the talent and money expended upon these attempts. It had been properly described as a question between steam and electricity. Mr. Allan had pointed out the advantages of such machinery in situations where fires and steam-boilers were not admissible, but in looking at the machine before them, the apparatus outside the room must not be forgotten. The large batteries required to give motion to the little machine must not be overlooked. Let a comparison be made between the materials composing those batteries with the cheap and readily obtained materials (coal and water) with which a steam-engine of ten times the power of the engine before them and occupying hardly more space, could be worked. He thought it wrong to pay compliments to any one who he believed was pursuing a mistaken course. He did not wish to throw any discouragement in the way of Mr. Allan, but how little progress had been made in the application of this power, notwithstanding the attempts which men of science and genius had made for the last twenty years. The case was analogous to that of the electric light. Improvements, no doubt, had been made in the production of it, but it was still only available where cost was no object. It could not be used for street lighting or domestic lighting. Still that was all the progress that had attended the researches and labours of some of the most eminent men of the age for many years past. He believed the great duty of mechanics in general, and of this Society in particular, was to encourage—not complicated machinery, but to cultivate the most simple forms, and the adaptation of the most simple elements, and those marked out by nature as the cheapest and most easily convertible to their use. He should prefer to see Mr. Allan devoting his great abilities to some more practical and useful subject than that now before the meeting would, in his opinion, ever prove.

Mr. **Spencer** said, looking back at the slow progress which had been made during the last 100 years in the development of the great agent, steam, he was not without hope with regard to the subject before the meeting. He thought pioneers of every great discovery deserved encouragement, and he had no doubt whatever that what had been exhibited that evening was but the beginning of a great and important improvement. Although he had no practical acquaintance with the subject, yet economy of fuel in the generation of steam had occupied his attention through life; and although he scarcely thought that he should live to see it, yet he believed that electro-magnetic motion would ultimately be brought into practical use. The past history of steam gave every encouragement for hope.

Mr. **Allan**, in reply, said, when he undertook to read a paper on electro-magnetism as a motive power, he was aware that it was a venturesome task. He was aware of the amount of opposed theory that would be brought to bear against him; still he had laid his views before the meeting. He had told them at the outset that the matter was progressive—he might say, in its infancy—and he did not think, after having given a great amount of study and investigation to the subject, he had reason to be discouraged. He was not prepared to admit that the mechanical force of the electric current was no more than the heating power of the same current. His friend (Mr. Hearder) disagreed with him on the subject of the variation of the attraction as the squares of the distance. He did not say that was absolute, but it was dependent on the changes in what he would term the pole of the magnet. He had endeavoured to apply the forces in the most economical manner. The construction of the electro-magnet was a question in which there was a great deal still remaining to be done, and in the production of electricity it was impossible to predicate what might eventually be accomplished. He had merely taken the battery as he found it, and applied it to give power and motion to the machine. In the little engine before them the fault was that it did not produce within one-fifth the power it ought to do, owing simply to faulty construction, which could be got over in any machine hereafter to be made. The machine before the meeting had been tried at the Conservatoire des Arts et Metiers, Paris—not for the purpose of showing power at a small cost, but the principle of the application of the forces, for there were faults in the construction of the machine which changed the relative proportions to a great extent. It was the opinion, then, that the power would be best developed at a lower speed, and it was found upon calculation that the cost of working was 27 times that of steam. With regard to the battery power alluded to by Mr. Hawes, he had brought what was suitable for the purpose, but it did not follow that because the battery was of large dimensions, that therefore it was a battery of enormous consumption. He had found that the most economical way of working was to have a large reservoir of electricity, so to speak, so as to work a long time without the battery diminishing in power. The small model on the table had been kept at work for 10 days and nights without cessation, and without change of the battery power. Notwithstanding all that had been said on this subject—and he did not object to opposition—it would only stir him up to further research, and he hoped on a future occasion to come before them with still better ascertained results.

The **Chairman** said they would all agree that Mr. Allan had brought before them a most interesting paper, and he felt sure the meeting would be ready to accord their thanks to him.

A vote of thanks was then passed to Mr. Allan.

The Secretary read the following letter from Mr. Henry Reveley, and described the diagrams illustrating arrangements referred to in that gentleman's letter:—

"Sir,—A description of a patented invention for this purpose is now being noticed in the public prints, and I beg to be allowed a small space to state the fact that this invention is identical with an experimental engine made under my direction by Mr. Palmer, philosophical instrument-maker, late of No. 122, Newgate-street (Horne and Thornthwaites'), about the year 1840.

"My invention consisted of a polygonal piston-rod, armed with any number of keepers passing up and down between an indefinite number of stages of powerful horse-shoe electro-magnets, combined with a new mode of instantaneously making and breaking any number of circuits by means of cranks and jointed levers.

"The peculiar advantage of this construction would be, its applicability to every kind of existing steam-engine, with the sole alteration of removing the boilers and cylinder.

"My invention, which comprised no loose parts, was condemned by Mr. Palmer, for this reason, viz., that only 6¼ per cent. of the holding power of an electro-magnet in contact with keeper could be made available as motive-power at the distance of the thickness of a sheet of letter-paper. That is to say, that an electro-magnet whose holding power in contact was 100 lbs., would only exert a pull of 16 lbs. at the above mentioned distance, and therefore was much too expensive a mode of creating motive-power.

"Mr. Palmer and his foreman, who made the experimental engine, can attest these facts."

The Secretary announced that on Wednesday next, the 31st instant, there would be NO MEETING of the Society, and that on Wednesday evening, the 7th of April, a Paper by Dr. Odling, on "The Chemistry of Bread-making," would be read.

SOUTH KENSINGTON MUSEUM.

During the week ending 20th March, 1858, the visitors have been as follows:—On Monday, Tuesday, and Saturday, free days, 4,340; on Monday and Tuesday, free evenings, 4,213. On the three Students' days (admission to the public 6d.), 1002; one Students' evening, Wednesday, 105. Total 9,660.

Home Correspondence.

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PUDDLED STEEL.

Sir,—In my letter of the 17th of March, in reference to puddled steel, I omitted to mention that, in addition to that quality of which the tensile strength is stated at 160,000 lbs. per inch, and in one sample 173,817 lbs., other samples representing a different quality of the material, exhibited a strength of 112,000 lbs. per inch, or about *twice* the strength of iron.

To ascertain the relative weight of a girder of puddled steel of this quality, as compared with ordinary iron, and using the same letters as before, we have $\frac{2\,(w + ul)\,l}{d\,a} = \frac{(w' + ul')\,l'}{d'\,a'}$. The spans and depths being the same, $l = l' - d = d'$, and $a : w :: a' : w'$. Therefore $w' = \frac{w\,n\,l}{w + 2\,n\,l}$. Applying this to the case of the Menai tube; $w' = \frac{1553 \times 460}{1553 + 2 \times 460} = 289$ tons.

That is to say, a girder of 289 tons would possess the same effective strength as the Menai tube, which weighs 1,553, if the material employed were twice the strength of iron.

The result, like that mentioned in my former letter, is sufficient to show the great importance of obtaining a more accurate knowledge of the new material—and it is especially important to ascertain, by testing numerous samples, whether the strength of puddled steel can be depended upon as an uniform result, and if not, to what degree of variation it is subject.

I am, &c.,
W. H. BARLOW.

Proceedings of Institutions.

◆

Liverpool.—On Tuesday evening, March 9th, a meeting was held of all the pupils of the evening schools, at the Collegiate Institution, the Rev. J. S. Howson, M.A., principal, in the chair. He introduced the Rev. Dr. Hume, Local Secretary of the Society of Arts, at Liverpool, who delivered an address, stating the nature and advantages of the Examination to be held in connection with the Society. A similar address had been delivered at the Liverpool Institute, at its annual meeting on the 20th of January, William Brown, Esq., M.P., in the chair. In both cases the thanks of the meeting were given to Dr. Hume for his full explanations. A Local Board has been formed to conduct the preliminary examination and superintend the subsequent one.

Redhill.—The fourth annual report of the Institution for the last year records the continued progress of the society, and states that while the returns show double the number of subscribers to have withdrawn, as compared with last year, a much greater number has been added to the honorary as well as the ordinary list of members; and it is hoped that the advantages offered by an interchange of privilege with Reigate Institution, combined with other means now in progress and contemplation for general improvement, will excite and maintain a still greater interest in promoting the objects of the Institution. The number of subscribers at the present time is 170; 90 have been admitted during the year; 60 have left; leaving a net increase of 30. The number at the close of last year was 140. Two musical entertainments and sixteen lectures have been given during the year, seven gratuitous, and eleven at an expense to the Institution of nearly £32. The library now contains 597 volumes, of which 127 by gift and purchase have been added during the year. The number of each class of books issued during the year was as follows:—Educational, 118; Biographical, 59; Poetical, 64; Historical, 44; Miscellaneous, 333; Novels, &c., 504; making the total number, 1,122 Those of a light class, 504; and those of an instructive character, 618 The elementary class for writing and arithmetic, has been much better attended, and the discussion class has been recommenced. The class for instrumental music has given a lively interest to the Institution, and one has also recently been formed for vocal practice and instruction. The financial position of the Institution is favourable, and the Committee desire specially to acknowledge a donation of £10 10s 0d, from W. Klein, Esq.; also £5 5s. 0d from W. Hackblock, Esq., M.P; this latter sum having been given for the purchase of books.

MEETINGS FOR THE ENSUING WEEK.

Mon. Actuaries, 7.
United Service, 8½. Capt. Nolloth, R.N., "On the Atlantic Telegraph Cable."
Tues. Civil Engineers, 8. Mr. R. C. Despard, "Improvements of the River Lee Navigation; with remarks on Canals."
Wed. Chemical, 8. Anniversary.
Thurs. Linnæan, 8. Mr. C. Dresser, "On Contributions to Organographic Botany."
Chemical, 8.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, March* 19, 1858.]

Dated 7th Feb., 1858.

24. J. Kidd, 6, Bridge-parade, Bristol—Improved apparatus for regulating the pressure and supply of steam, gas, or other rarified or compressed bodies, and for causing more perfect combustion of the gases procured from coal, and increasing the heating and illuminating power of the said gases.

Dated 9th Feb., 1858.

240. R. Millard, Duncannon-street, Trafalgar-square—A portable chair.

Dated 13th Feb., 1858.

275. J. Duncan, Greenock—Imp. in the manufacture of ornamental chenille fabrics.

Dated 20th Feb., 1858.

338. J. Sworn, 29, Churton-street, and Thomas Weston, 40, Churton-street, Pimlico—An improved adhesive composition for whitening and clearing the surface of stones.

Dated 1st March, 1858.

398. T. Mills, Partick, Lanark, N.B.—Imp. in apparatus for treating and dressing flour or reduced grain.

Dated 3rd March, 1858.

416. W. H. Sleeboom, Hamburgh—Imp. in the construction of the keel of ships or other vessels.
418. G. and J. Kirkley, Salford—Imp. in perforating slates or similar materials.
424. J. Fowler, jun., Cornhill—Imp. in apparatus employed in laying down electric telegraph cables.

Dated 4th March, 1858.

426. C. Hart, P. Gibbons, and H. Gibbons, Wantage, Berkshire—Imp. in the construction and arrangement of combined thrashing and winnowing machines, and in the application of animal power thereto.
427. J. M. Ure, Glasgow—Improved apparatus for lifting the driving wheels of a locomotive off the rails, and which can be used when the locomotive is either running or stationary.
428. G. F. Hipkins, Birmingham—Imp. in constructing and attaching knobs and spindles, and in connecting knobs to doors, drawers, and other articles.
429. J. Knowelden, Southwark—Imp. in obtaining motive power.
431. J. Dewar, Edinburgh—Imp. in the manufacture of boots and other coverings for the feet.
432. C. P. Stewart, and D. G. Hope, Manchester—Imp. in locomotive and other engines.
434. P. Moore, Birmingham—An imp. or imps. in the manufacture of hinges.
435. T. Cowper, Douglas, Isle of Man—Imp. in the construction of ships or vessels, and the method of discharging bilge water therefrom.
437. W. Thomson, Glasgow—Imp. in apparatus for applying and measuring resistance to the motion of rotating wheel shafts or other rotating bodies.

Dated 5th March, 1858.

438. C. Boyce, Tipton—A new or improved anchor.
439. H. G. Collins, Paternoster-row—An improved method of obtaining impressions on an enlarged or diminished scale from engraved plates or other printing surfaces.
440. A. G. Barham, Bridgewater—Imp. in the manufacture of gypsum.
441. C. F. Vasserot, 45, Essex-street, Strand—Imp. in the manufacture of wrought iron wheels for locomotives, tenders, waggons, &c. (A com.)
442. N. Common, Rose-hill, Brighton—An improved arrangement of water supply valve.
443. J. F. Cole, Devonshire-street—An imp. in watches and other time-keepers, and an improved escapement wheel or pallet to be employed therein.
445. C. F. Parsons, Duke-street, Middlesex—Imp. in machinery for producing and revivifying animal charcoal.
446. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in railway signals. (A com.)

Dated 6th March, 1858.

447. C. R. Moate, 65, Old Broad-street—Imp. in the permanent way of railways.
449. S. Wheatcroft, 14, Brudenell-place, Hoxton—The manufacture of cap fronts, and applicable to the manufacture of ruches and ribbon trimmings.
451. J. S. Nibbs and J. Hincks, Birmingham—Imp. in oils and spirit lamps.
453. W. Wilkinson, Bayswater—Imp. in the means of facilitating communication across seas or other waters, parts of which are applicable to telegraphing on land.
455. E. Burke, 69, Upper Thames-street—An imp. in applying iron tubes to locomotive and other tubular steam boilers. (A com.)
457. W. Reid, 58, Westgate-street, Newcastle-on-Tyne—Imp. in the permanent way of railways.
459. A. S. M. Derouen, Paris—Imp. in machinery for combing fibrous substances.
461. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in the production of aluminium and its alloys, and in the production of other metals, the oxides of which are not reducible by charcoal. (A com.)
463. E. Morel, Ghent, Belgium—Improved machinery for drawing fibrous substances. (A com.)

Dated 8th March, 1858.

465. G. Redford, 6, Hutton street, Moss Side, Manchester—Making bullet-cartridges of one continuous piece of metal.
467. T. Lyne, Malmsbury, Wilts—An improved harrow.
469. J. Young, Wolverhampton—An imp. or imps. in the manufacture of hinges.
471. J. F. Budd, Ystalyfera Iron Works, Swansea—Imps. in the smelting or refining of tin, tin ores, and tin scruff.

Dated 9th March, 1858.

473. M. Casentini, Westminster-road, Lambeth—Imps. in preparing and indurating plaster, in preparing surfaces to receive plaster, and in preparing or perfecting plaster surfaces.
475. R. Skene, Garmouth, Fochabers, Elgin, N.B.—Imps. in obtaining motive power from water.
477. G. F. Harrington, Ednam House, Ryde, Isle of Wight—Imps. in the manufacture of artificial teeth and in the beds and palates for teeth.
479. J. H. Johnson, 47, Lincoln's-inn-fields—Imps. in the manufacture of stockings and other hosiery goods. (A com.)

Dated 10th March, 1858.

481. G. Davies, 1, Serle-street, Lincoln's-inn—An improved eye or ring bolt. (A com.)
483. B. Beale, East Greenwich—An improved method of cutting and shaping spokes.
485. G. S. Andrews, Charlewood-street, Pimlico—Imps. in washing machines.

Dated 11th March, 1858.

487. G. Davies, 1, Serle-street, Lincoln's-inn—Imp. in life boats. (A com.)
489. J. Young, Glasgow—Imp. in lamps.
491. J. D. Humphreys, Charlotte street, Middlesex—Imp. in machinery for moulding, compressing, and solidifying artificial fuel and other substances capable of being compressed.
493. F. A. Verdeil, Rue St. Sulpice, Paris—Imp. in treating madder.

WEEKLY LIST OF PATENTS SEALED.

March 19th.

2448. E. B. West.
2456. R. Lawson.
2457. Hesketh Hughes.
2463. F. C. Bakewell.
2469. W. B. Johnson.
2471. A. V. A. Laugère.
2476. L. Newton.
2493. W. Bowler.
2546. C. Reeves.
2547. W. and G. Richardson.
2550. M. Henry.
2618. M. Martin.
2688. A. V. Newton.

March 23rd.

2474. J. Barber.
2475. J. Kelshaw and J. Wilkinson.
2484. J. Lewis.
2490. R. Kay.
2498. W. W. White and W. Bull.
2506. W. E. Newton.
2565. A. Applegath.
2571. T. Forsyth.
2595. F. A. Calvert.
2626. J. H. Johnson.
2627. E. Owen.
2673. E. Cockey, H. Cockey, and F. C. Cockey.
2753. G. W. Robinson.
2755. J. B. Fraser.
2769. R. M. E. Hall and J. Hall.
2931. J. H. Johnson.
3022. J. Sinclair.
3037. H. Dolman.
3165. A. Chaplin.
30. E. Maw.
72. J. Austin.
73. R. Archibald.
81. T. Hamilton.
91. T. Pirie.
102. J. J. Russell.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

March 16th.

618. W. Smith.
655. W. Brown.
680. G. L. Turney.

March 17th.

616. R. E. Hodges & C. Murray.
668. F. Crossley.
811. I. Vernon.

March 18th.

625. B. O. Stratford.
661. J. Britten.

March 19th.

630. A. V. Newton.
663. J. McKinnell.

March 20th.

617. J. Willis.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
4067	March 17.	Catch or Fastening for Cupboard and other doors	T. Pemberton and Sons...	Birmingham.
4068	„ 19.	Certain parts of Folding Bedsteads or Chairs	H. Thompson	302, Strand.